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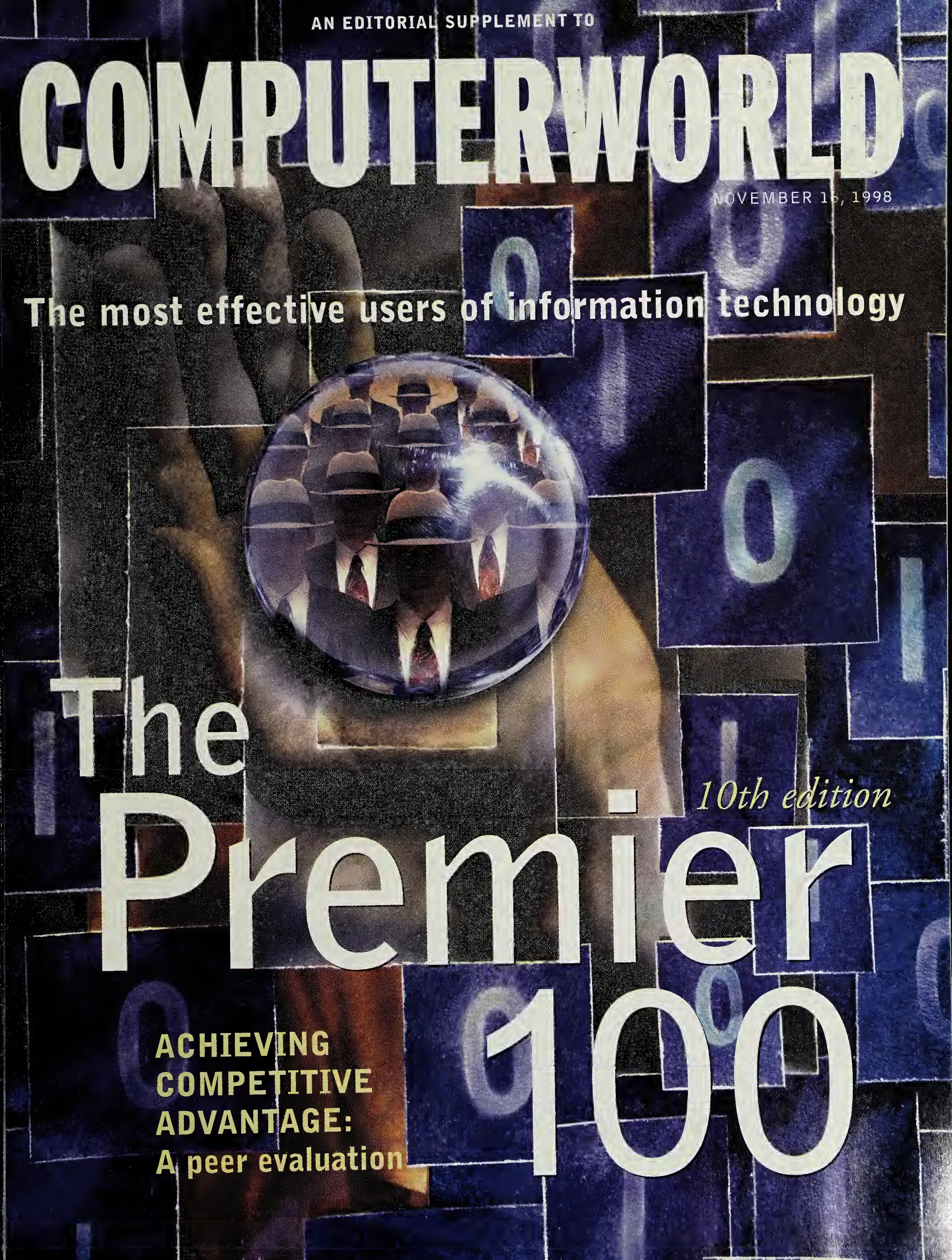
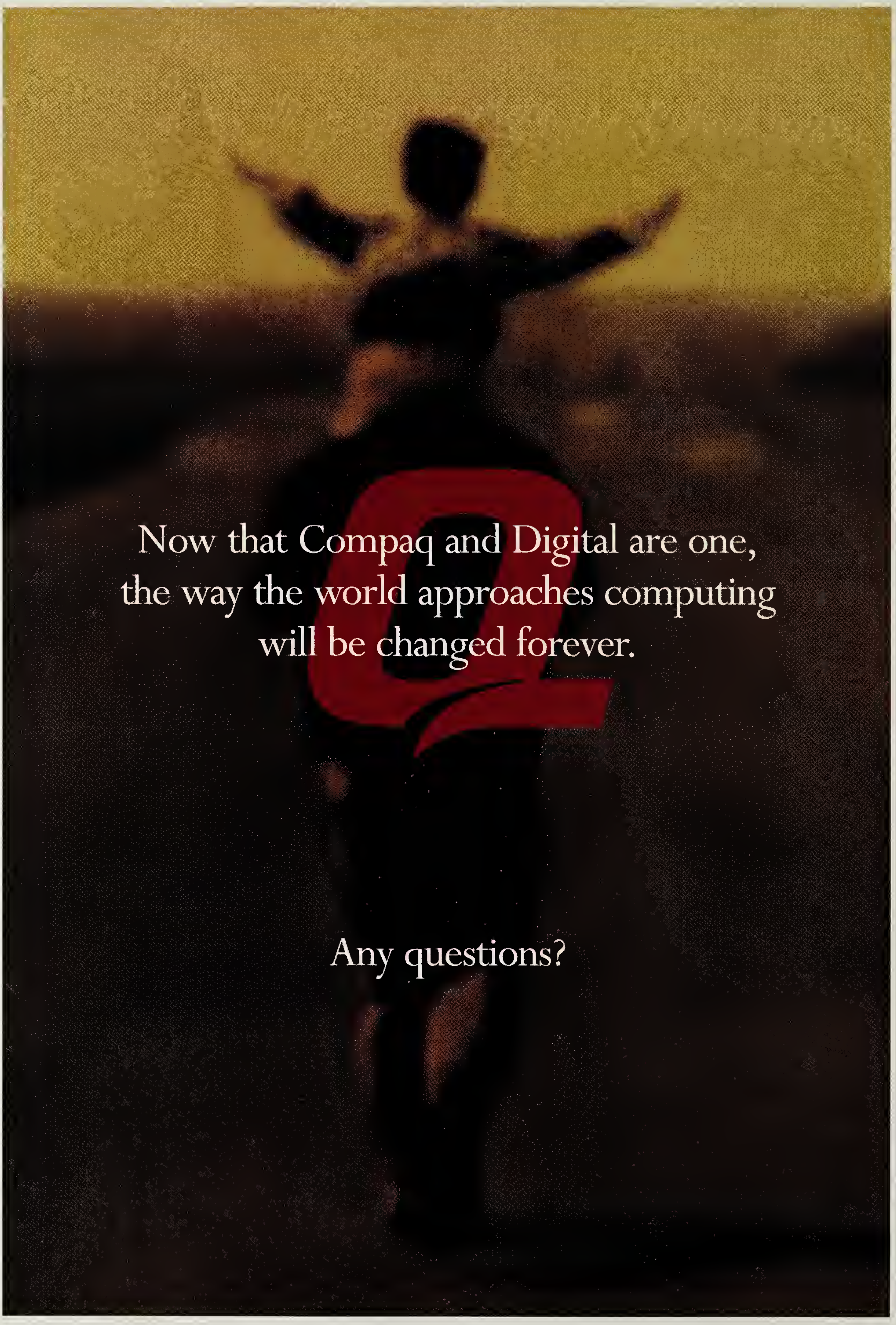


The most effective users of information technology

The Premier 100

10th edition

ACHIEVING COMPETITIVE ADVANTAGE: A peer evaluation


Now that Compaq and Digital are one,
the way the world approaches computing
will be changed forever.
Any questions?

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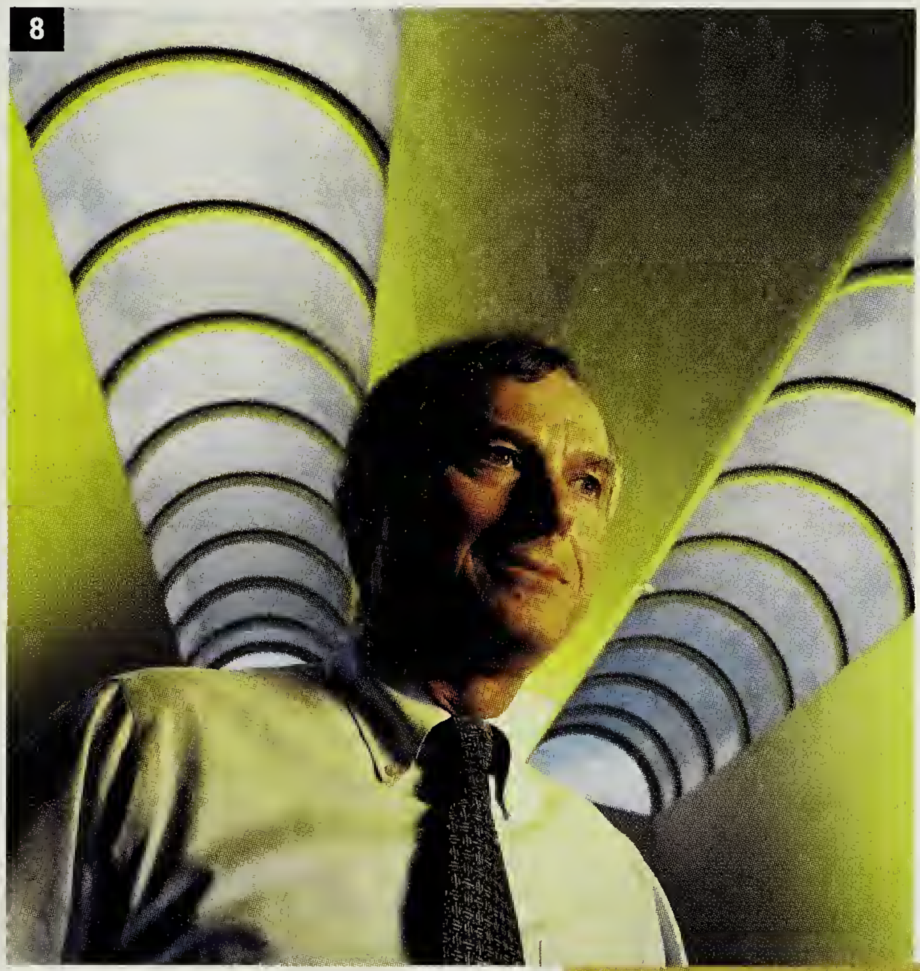
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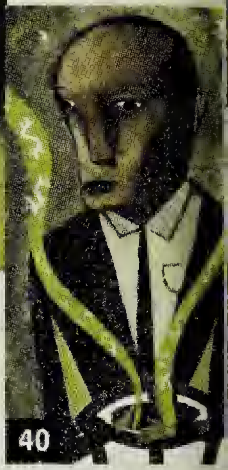

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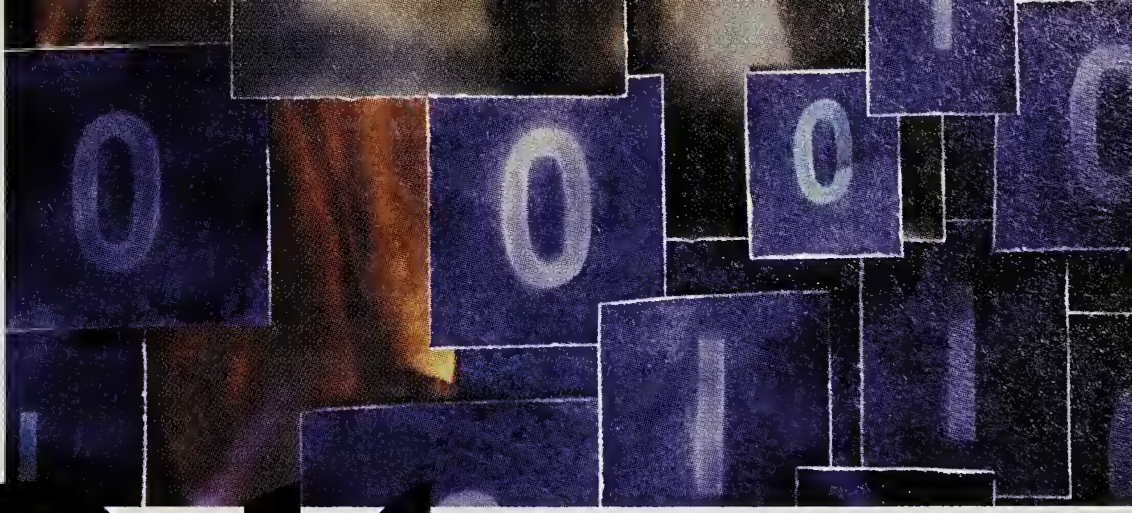

Peer Praise

Who better to pick the best users of technology than IT managers?

By Amy MALLOY

IF IMITATION IS THE SINCEREST FORM OF FLATTERY, PEER RECOGNITION IS PROBABLY A CLOSE SECOND, which explains why we decided to base this year's Premier 100 list on peer evaluations.

Because information technology is so tightly linked to the business these days, its contributions are more evident than ever before, and one company need not have intimate knowledge of the inner workings of another to assess IT's value. A company's success with IT is apparent through superior customer service, rapid revenue growth and reduced cycle times.

With all this in mind, we asked 1,000 IT managers to pick the Fortune 1,000 companies they consider the most effective users of IT and why. They gave us a host of reasons, ranging from supply-chain management to electronic commerce.

Naturally, certain companies were nominated more than others, but none were named to the list without rigorous investigation. Their most-effective-user status is based on their focus on business needs, ability to finish most projects on time and on budget, effective communication between departments and targeted use of technology.

As we studied information from a survey that we asked these 100 companies to complete, we discovered some trends. Premier 100 companies do not use technology for its own sake; they are, rather, pragmatic in their use of IT. Most of these elite companies approach new technology gingerly.

Roughly 40% of respondents say that less than 10% of their business-critical applications make use of the Internet or Internet-derived technologies. About 10% use the Internet in 75% or more of their business-critical applications. They use newer technologies only where appropriate. Premier 100 managers anticipate strategic issues and use technology to create competitive advantage.

This advantage comes not only from cost savings due to IT but also from revenue that Premier 100 companies generate with technology. This is partially through new Internet-driven business

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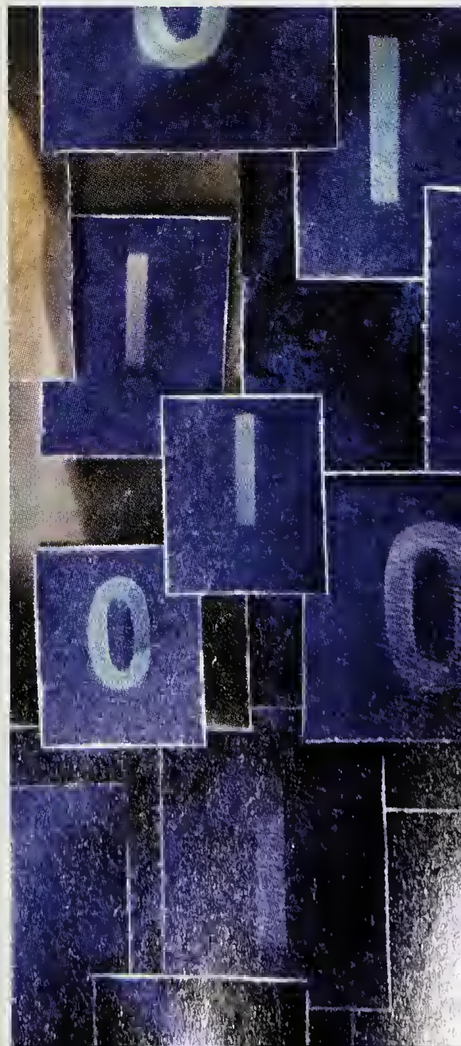

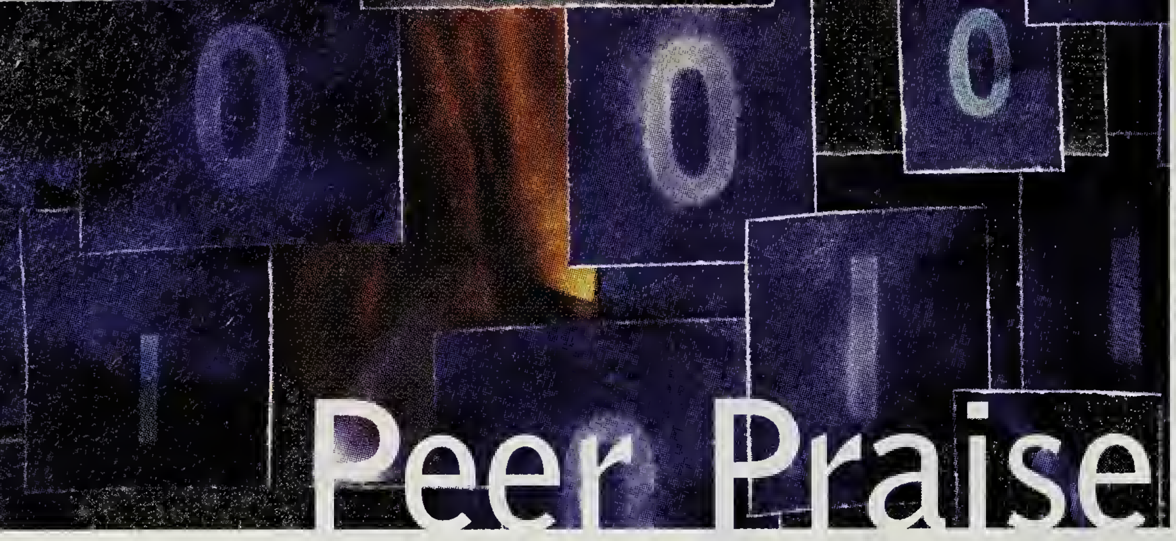

Peer Praise

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models and also through strategic systems built to create or maximize competitive advantage.

For example, Tech Data Corp. of Clearwater, Fla., increased its sales with electronic commerce offerings. Clients can order the computer distributor's goods online, and resellers can customize Tech Data's Web site to look like their own. Eventually, the company will make it possible for clients to link their Web sites to its own back-order system (see "Harmonic Convergence," p. 14).

IT managers know that to generate better communication with customers, they need to communicate with their business departments. Through a constant flow of information, IT departments are able to tightly align systems and create interdependencies between systems and linkage between cross-functional processes.

PECO Energy Co. does this well. During a massive re-engineering project, Philadelphia-based PECO's CIO Cassandra Matthews chose a team of technological experts and representatives from various business functions. The team kept her up-to-date on how the project affected their departments. This continuous interchange made it possible for Matthews to react quickly and keep the project on track (see "Teaching an Elephant to Dance," p. 24).

The way the business and information technology sides of the house interact is essential to getting a project done on time and on budget. Premier 100 companies excel at this. Nearly a third say that 75% to 100% of projects meet these goals.

At most of these admired companies, the business side is involved with projects from the beginning. About 40% of respondents say that the CEO, president or corporate management make decisions about which business-critical applications are built. For 61% of respondents, business unit management makes those types of decisions. Only 27% say the CIO makes these decisions.

With greater involvement from the business side comes greater understanding of the IT department's desire for outside help. Business managers are willing to use every tool within their grasp to stay competitive. If outsourcing a particular function or operation will pull a Premier 100 company forward, it won't hesitate to dish out the cash. Turning to an outsourcer is no longer a sign of desperation. An average of 20% of Premier 1998 IT budgets go to outsourcing and consultants (see "Outsourced, but not Outclassed," p. 36).

PEER ENVY

Premier 100 companies were most frequently nominated for the following:

- Customer service systems
- Data warehousing
- Electronic commerce
- Enterprise Resource Planning
- Leading-edge technology
- Sales-force automation
- Supply-chain management
- Web-based technology

Another way Premier 100 companies are achieving competitive advantage is with a less-is-more philosophy. Fewer standard configurations, fewer applications and fewer processes allow companies to move quickly and efficiently, also making it possible for these companies to execute stringent security practices (see "Access Granted," p 32).

Honeywell, Inc. in Minneapolis is making a Web interface its corporate standard. Everything from human resources information to a help desk application will be Web-enabled. Honeywell is heading in this direction in order to lower capital costs and increase profit (see "Making Dollars and Sense out of the Internet," p. 40).

Many Premier 100 companies are sticking with their business models and using IT to augment revenues in other ways. Sales-force automation and customer service systems are helping companies operate proactively rather than reactively. Using detailed customer information, businesses can anticipate market directions rather than discover what a customer wants after he's moved to a new supplier – then spend beaucoup bucks to win him back. In fact, 70% of respondents say customer marketing or sales are the users of the most strategic applications.

Innovation isn't the only thing on the minds of Premier 100 CIOs. Half the respondents listed year 2000 as one of their most important business-critical projects this year. For some this is compliance; for others, it is netting out a contingency plan. In either case, it's about staying in business.

Other concerns: The pace of technology change, finding a way to differentiate products and globalization.

Even though these companies are in the upper echelon of IT users, they can't sit back and relax. They confront the same dilemma facing all companies: How to use technology to sustain a competitive edge once they achieve it. ■

Malloy is Computerworld's *project editor, magazines group.*

The List

The Premier 100 List by Industry

CONSUMER PRODUCTS/SERVICES

General Mills, Inc.
The Gillette Co.
Hilton Hotels Corp.
McDonald's Corp.
Monsanto Co.
PepsiCo, Inc.

FINANCIAL/BUSINESS SERVICES

Aetna, Inc.
American Express Co.
American Family Insurance Group
The Charles Schwab Corp.
Cigna Corp.
Citicorp *
First Chicago NBD Corp. **
First Data Corp.
Fleet Financial Group, Inc.
Freddie Mac
The Hartford Financial Services Group, Inc.
J.P. Morgan & Co.
Mellon Bank Corp.
Merrill Lynch & Co.
Metropolitan Life Insurance Co.
National City Corp.
Northwestern Mutual Life Insurance Co.
Paine Webber Group, Inc.
The Progressive Corp.
The Prudential Insurance Co. of America
State Farm Mutual Automobile Insurance Co.
State Street Corp.
USAA
Wells Fargo & Co.

HEALTH CARE

Becton, Dickinson and Co.
Merck & Co.
United HealthCare Corp.

INFORMATION TECHNOLOGY

3Com Corp.
Applied Materials, Inc.
AT&T Corp.
Automatic Data Processing, Inc.
Cisco Systems, Inc.
Compaq Computer Corp.
Computer Associates International, Inc.
Dell Computer Corp.
GTE Corp.
IBM Corp.
Ingram Micro, Inc.
MCI Communications Corp. ***
Microsoft Corp.
NCR Corp.
Oracle Corp.
Silicon Graphics, Inc.
Sun Microsystems, Inc.
TRW, Inc.
Unisys Corp.
Xerox Corp.

MANUFACTURER

AlliedSignal, Inc.
Avery Dennison Corp.
Bethlehem Steel Corp.
Caterpillar, Inc.
Dana Corp.
Ford Motor Co.
General Dynamics Corp.
General Motors Corp.
Honeywell, Inc.
International Paper Co.
Lockheed Martin Corp.
Owens Corning
Raytheon Co.
Rockwell International Corp.
USG Corp.

MEDIA/ENTERTAINMENT

CBS Corp.
The McGraw-Hill Cos.
Viacom, Inc.
The Walt Disney Co.

PETROLEUM/CHEMICAL

The Dow Chemical Co.
Phillips Petroleum Co.
Texaco, Inc.

TRANSPORTATION/UTILITY

AMR Corp.
Burlington Northern Santa Fe Corp.
Continental Airlines, Inc.
CSX Corp.
Delta Air Lines, Inc.
Duke Energy Corp.
FDX Corp.
PECO Energy Co.
Southwest Airlines Co.
UAL Corp.
Union Pacific Corp.
United Parcel Service of America, Inc.

WHOLESALE/RETAIL

Ace Hardware Corp.
CompUSA, Inc.
Dayton Hudson Corp.
The Home Depot, Inc.
J. C. Penney Co.
The Kroger Co.
The Limited, Inc.
Sears, Roebuck & Co.
Sysco Corp.
Tech Data Corp.
Tyson Foods, Inc.
Walgreen Co.
Wal-Mart Stores, Inc.

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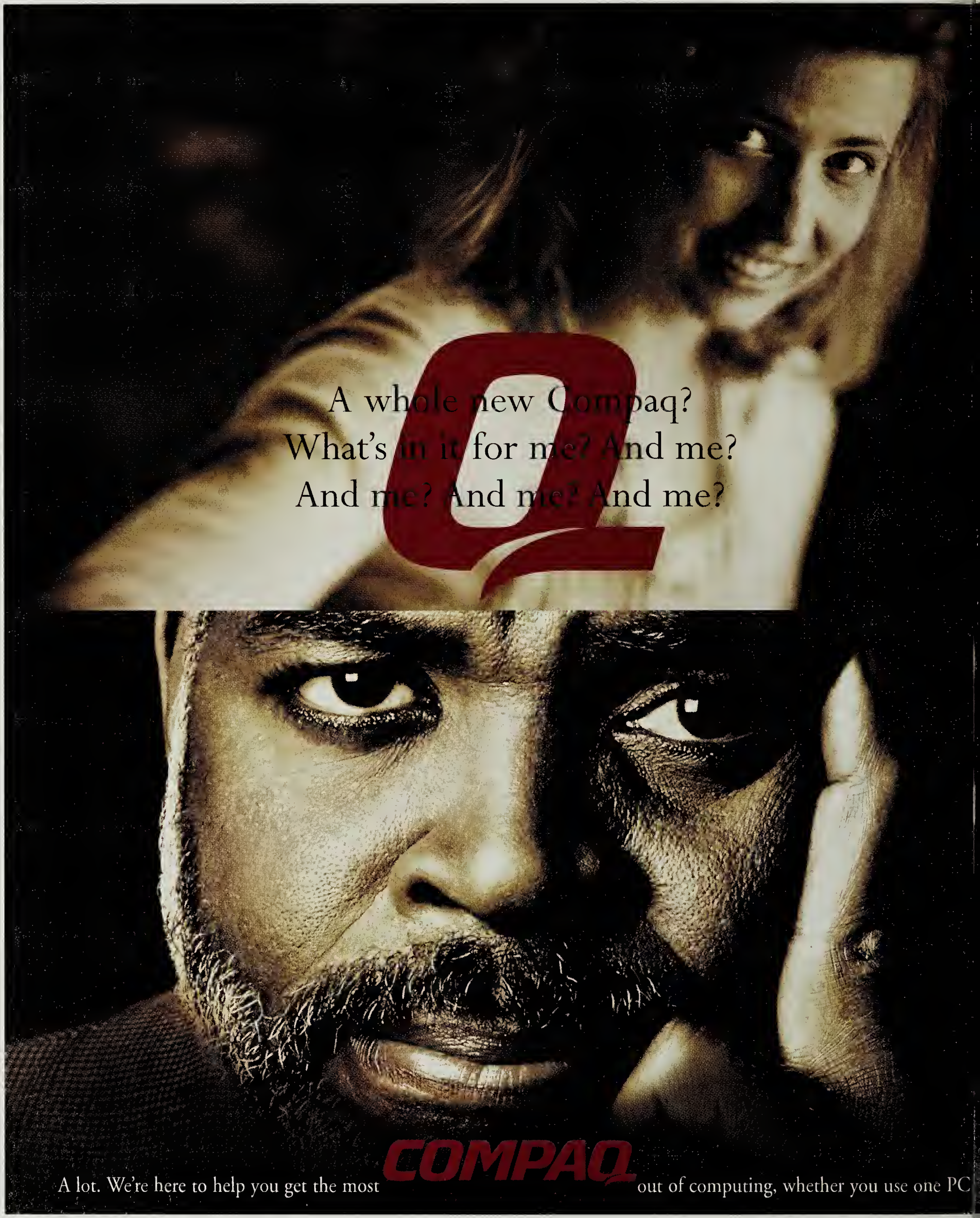
* Merged with Travelers Group on Oct. 8 to form Citigroup, Inc.

** Merged with Banc One Corp. on Oct. 2 to form Bank One Corp.

*** Merged with WorldCom on Sept. 14 to form MCIWorldCom, Inc.


A whole new Compaq?
What's in it for me? And me?
And me? And me? And me?
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strategic partnerships. And the passion for useful innovation that drives us to seek the bes

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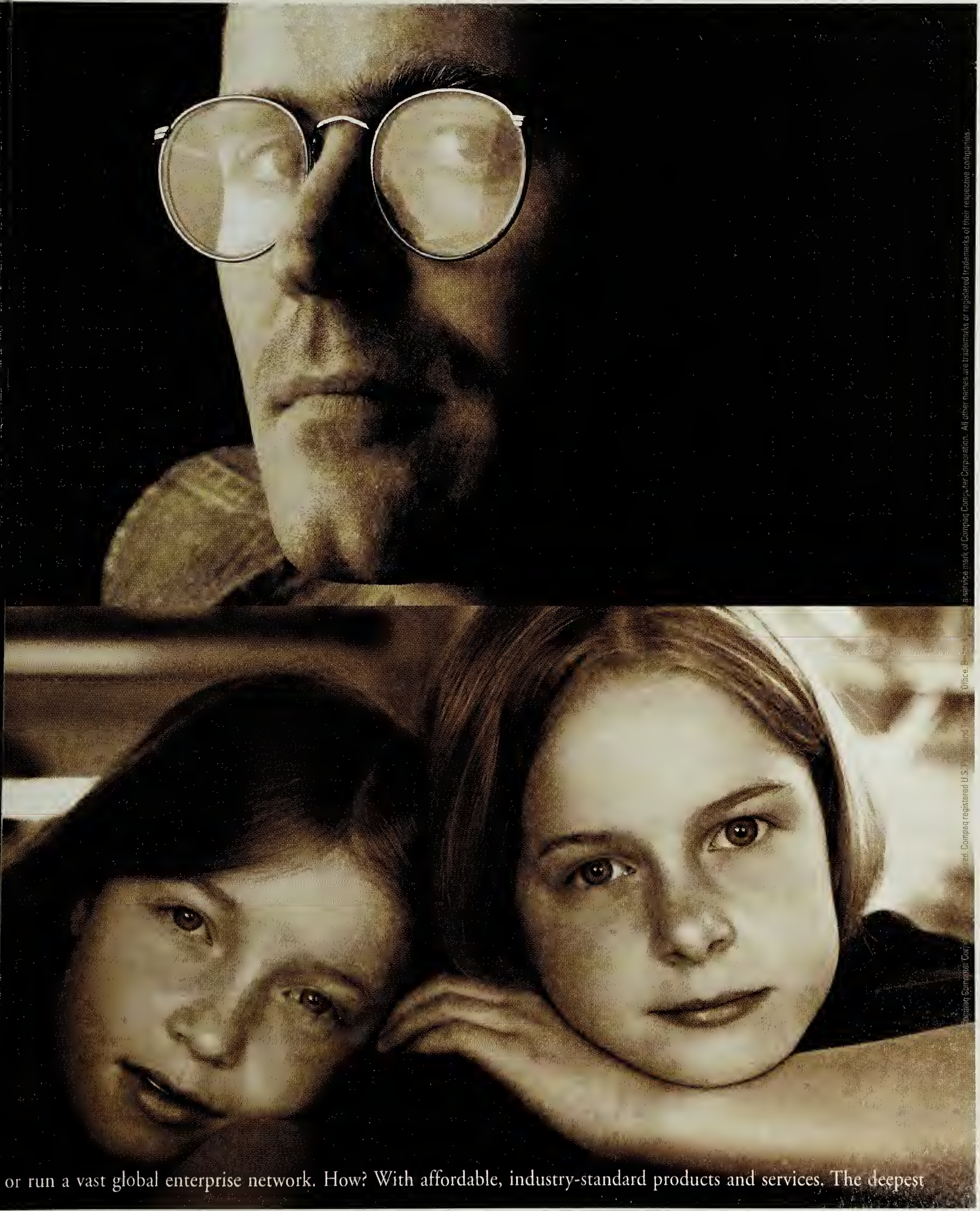

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GAINING AN EDGE:

ADP's RENATO CROCETTI says his firm's IT efforts are client-centered: "We want to ensure that technology can empower them."

it's all about IT

Tracey Kroll

By John VERITY

BETTER MARKETING. STREAMLINED distribution. Improved customer service. Reduced expenses. Lower inventories. Increased product differentiation. Greater return on investment.

Such are the refrains echoing across corporate America as companies scramble to gain an edge on competitors. Whether a company sells chicken wings, razor blades, hotel rooms, business services or computer software, technology is essential to achieving and sustaining an advantage.

How could it be any other way? Between the globalization of markets, the rampant commoditization of products and services, increasingly sophisticated customers and short product cycles, corporations fight their way daily across a minefield of strategic obstacles. It's impossible, Premier 100 executives say, to meet those challenges without well-planned, finely crafted information systems.

> *The Premier 100 use technology to differentiate their products and services through customer service, price and time to market*

Nor is it possible without seasoned technologists at the topmost levels of management. From the boardroom down, Premier 100 business managers recognize their technology managers as equals.

"We're not looked at as a black hole anymore, just spending a lot of money with no visible payback," says Gary Quinn, executive vice president for global information and administrative systems at Computer Associates International, Inc. "We're very visible because we empower both the sales and development people. I work with the president and the chief operating officer," he says.

Premier 100 companies are seeking advantage by simplifying their procurement of computers and dictating a consistent technology platform across the entire organization. The technology standard is not as important as how that technology is applied. For example, take poultry producer Tyson Foods, Inc. "Tyson's pretty middle-of-the-road in its technology strategy. We're just building the tools we need to better market our products and provide higher levels of customer service," says Gary D. Cooper, chief information officer and vice president of MIS at the Springdale, Ark., corporation.

Cooper might be speaking for all companies today – they all face the challenge of differentiating their offerings from those of competitors. And in many sectors, there's only marginal opportunity to do so. No hotel can make its beds that much more comfortable than another's. All brands of PCs use essentially the same hardware and software components. And chicken is pretty much chicken, no matter how you slice it.

None of which is surprising, given how much corporate America has spent in the past 40 years on applying ever-more sophisticated automation to the factory floor, the back office and, more recently, to front-office activities such as sales and customer service.

Making a difference

But if technology has been the great equalizer, it's still the most effective means of differentiating products, too. Suppliers can compete along only a few avenues: price, product features, service, and sales and marketing. Their only choice is to use information technologies to drive down the costs of production and distribution, to design better products and improve service.

"IS is giving a competitive edge to this entire corporation," says Larry Kittelberger, CIO at AlliedSignal, Inc. in Morristown, N.J.

The numbers confirm this. Corporate spending on computing and communications grew by 13.3% last year, vs. an average of 8.1% per year from 1987 to 1994, says IT watcher Paul Strassmann, CEO of Software Testing Assurance Corp. in Stamford, Conn. While the increase may reflect concern for year 2000 problems (see "Staying in Business," p. 11), it also reflects

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the growing use of electronic commerce, intensified efforts to streamline supply chains and, with the mainstreaming of Web access and plummeting cost of microelectronics, the proliferation of new products and services whose perceived value depends increasingly on IT.

The top business-critical challenges that Premier 100 respondents are facing: keeping up with market expansion, achieving operational efficiency and preparing for the year 2000

Another measure: Technologic Partners, New York publisher of the newsletter "VentureFinance," calculates that in the first quarter of this year, U.S. venture capitalists pumped $869 million into 98 early-stage software companies. Clearly, informed bettors are counting on demand growing for many new kinds of enterprise systems.

Improving customer service is among the most popular ways that Premier 100 companies seek competitive advantage. Tyson, for example, has set up a Web-based extranet to improve the flow of information to food brokers, its major customers. Brokers can quickly find out how much business they've done with Tyson, what orders may be pending and where a particular order stands. Tyson's Broker Workbench allows chicken wholesalers to find out about new products. Online, a broker can quickly configure new menus and dishes for the sake of, say, a regional family restaurant chain. To help sell to the chain's buyers, Tyson's system can calculate the fat and nutritional content of a new dish, the cost per plate and even the profit margins that the chain's franchise owners would enjoy.

"It's a customer service thing," Cooper says. "We're larger than the next three or four [poultry] producers combined, but we still face strong competition in regional and niche markets. And we have to stay on the ball with technology."

Putting more information into customers' hands is what Automatic Data Processing, Inc. (ADP) is trying to do, too. In addition to supplying financial markets data and other services, the Roseland, N.J., company remains the leading outsourcer of payroll, human resources and benefits administration services. "The accent is on service," says Renato Crocetti, vice president of information systems. "We want to keep our clients for life. And to do that, we want to ensure that technology can empower them." So ADP has created a way for employees of its corporate clients to administer their 401(k) plans and other benefits via the Web. In the past, these employees could only call ADP's telephone agents or fill out paper forms.

Generating revenue online

"The Internet is the great enabler," Crocetti says. ADP's main competition is primarily clients building or installing in-house payroll and HR systems, so ADP has to constantly improve its services, "to be the market leader and the technology leader," he says.

Crocetti says ADP has enjoyed "many millions of dollars' worth of savings" in reduced call center costs in addition to improved revenue. "We charge clients for Internet access to the benefits administration system," he says. "That generates revenue comparable to the product itself." More important, perhaps, Internet access "changes the economics" of the business and allows ADP to profitably deliver simplified sets of services to smaller clients. The Internet also adds to the retention of clients. Without it, he says, "our market share would slip, absolutely. But with it, we can sustain our growth of 15% to 20% a year and keep improving our earnings per share and margins, too."

At Boston-based Gillette Co., the drive for competitive advantage is also focused on customer service, but of a different kind. Over the past decade, Gillette has grown largely through acquisition of established brands – such as Braun, Duracell and Oral B – and through global expansion. Gillette rushed into Eastern Europe, for example, often by teaming with local brands so it could hit the ground running. Yet while expanding its reach, Gillette saw its major customers consolidating. "The big were getting bigger faster," says CIO Pat Zilvitis. Chains such as Wal-Mart and Target were going global and controlling more of the distribution that Gillette wanted to reach.

So Gillette has devoted a great deal of energy to streamlining its supply-chain activities – not simply to cut costs and ship goods more accurately but also to deepen and broaden the information it's able to provide to its customers. "We want to be the [product] category leaders and act as a consultant to these companies," Zilvitis says. "We want to be able to help them plan their floor space. We have retail merchandisers who go out to stores and capture information and give feedback on how they can improve sales."

That has required a major consolidation of data centers and harmonization of business processes. Like many Premier 100 companies, Gillette is "recentralizing" its operations, Zilvitis says. It has chosen SAP's enterprise resource planning software as the global backbone of its information processing.

With a common system in place, the company can consolidate data into a corporate data warehouse, and "get better management of the company," he says. "We can look at the business by brand, by customer, by geography."

AlliedSignal, meanwhile, shows how large U.S. companies are weaving together the once-disparate strands of technology and business management.

"We make sure the IS function is well integrated with AlliedSignal's business plans," Kittelberger says. AlliedSignal runs IS as a business, with its own CFO, procurement, human resources, communications directors and CIOs in each business unit and continent.

"Our major goal is to use technology for competitive advantage," Kittelberger says. "We have to educate the company. Our job is to make sure our management is well-versed in the value of technology."

In fact, though, such literacy must be fostered throughout the organization. The enterprise's fluency is hampered if there are too many brands of E-mail package in use or if different groups use different operating systems.

"The importance of standards is paramount," Zilvitis says. "We're getting far more dictatorial about these things."

Whittling down systems

AlliedSignal recently trimmed its list of computing vendors from 750 to 350. After an internal survey found 29 different manufacturing resource planning systems in use, the company has begun converging around a single package: SAP's R/3. "It will tie the corporation together," Kittelberger says. "Common hardware and software allows us to move quicker. The theme is always speed and flexibility."

And at Islandia, N.Y.-based Computer Associates, standardized equipment means lower support costs. The software maker's internal specifications now call for only Windows 95 on desktop and laptop computers and only Windows NT on servers and workstations used for developing software. "Use Windows 98 and you're on your own," Quinn says. The result, he says, is that CA's internal help desk could probably support double its actual number of 12,000 employees without adding any staff.

The great leveler in systems, the ultimate common denominator, of course, is the Web. "All our new systems have Web-based components," Kittelberger says. "And we're putting a browser on every desktop."

AlliedSignal's intranet delivers more than 50 internal services – from career development advice to job-training course work. With four pilot projects under way in its aerospace and automotive business units, "the Internet is a new avenue to drive our growth," he says.

Quinn says electronic commerce is on the horizon at CA. If current tests go well, CA will soon be selling even its large-systems software products on the Web. "The Web should help us push more product with the same amount of people internally," he says.

Yet another example of how digital technology promises to boost a firm's competitive advantage. Clearly, computing and communications yield no advantage in and of themselves. Only with careful planning and strategizing can the technology pay off. ■

Verity is a freelance writer in Brooklyn, N.Y.

Staying in Business

Many companies might think of the year 2000 problem as a big nuisance, a lengthy, costly, risky and thankless task.

But it's also an essential one. Half of Premier 100 respondents say the Y2K project, both fixes and contingency plans, is among their top business-critical IT projects this year.

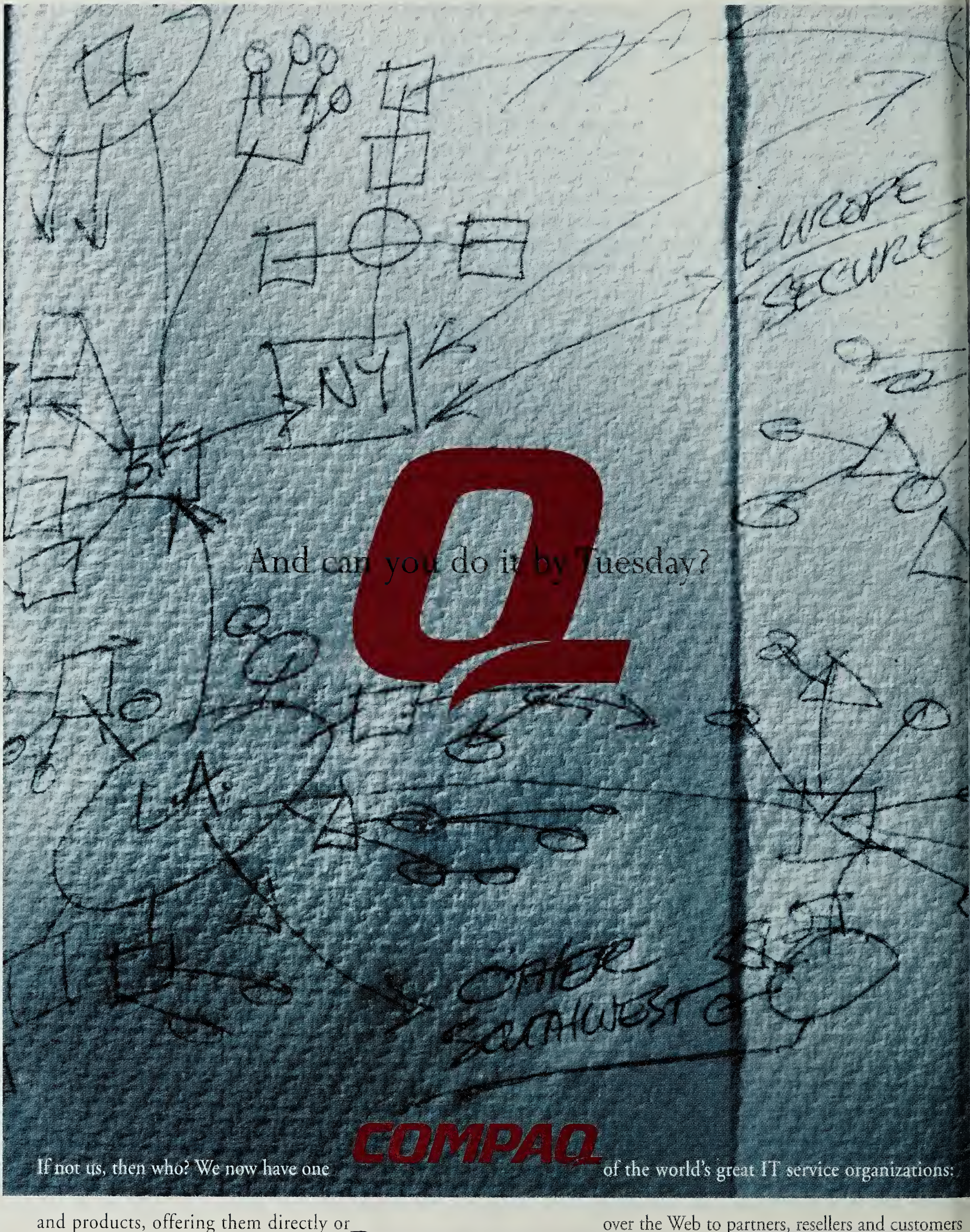
Some even look at Y2K as more than just a way to stay in business. Larry Kittelberger, CIO at AlliedSignal, Inc., takes a positive view: "We see the Y2K problem as an opportunity to gain competitive advantage," he says.

The Morristown, N.J., company has spent some $50 million on the problem, having taken the Y2K bull by the horns in 1995, when it hired four companies to help kick off its reprogramming and cleanup effort. Besides fixing the systems that run its business and drive its products, AlliedSignal saw an opportunity to weed out old, unnecessary legacy programming from its three data centers. "We've reduced 30% of our systems code as redundant," Kittelberger says.

"Our Y2K effort is going extremely well," he says. "We're shooting for all critical business systems to be fixed by year's end. We expect that our factories and manufacturing plants will all be fixed by the end of the first quarter of 1999." The company's electronic products, he said, will all have been tested by this fall. By January, AlliedSignal will have hammered out its Y2K contingency plans, designed to help it get through any problems that arise internally or with its supply chain. — *John Verity*

LARRY KITTELBERGER of AlliedSignal sees Y2K as a chance to gain competitive advantage.

ERICA FREUDENSTEIN/SABA



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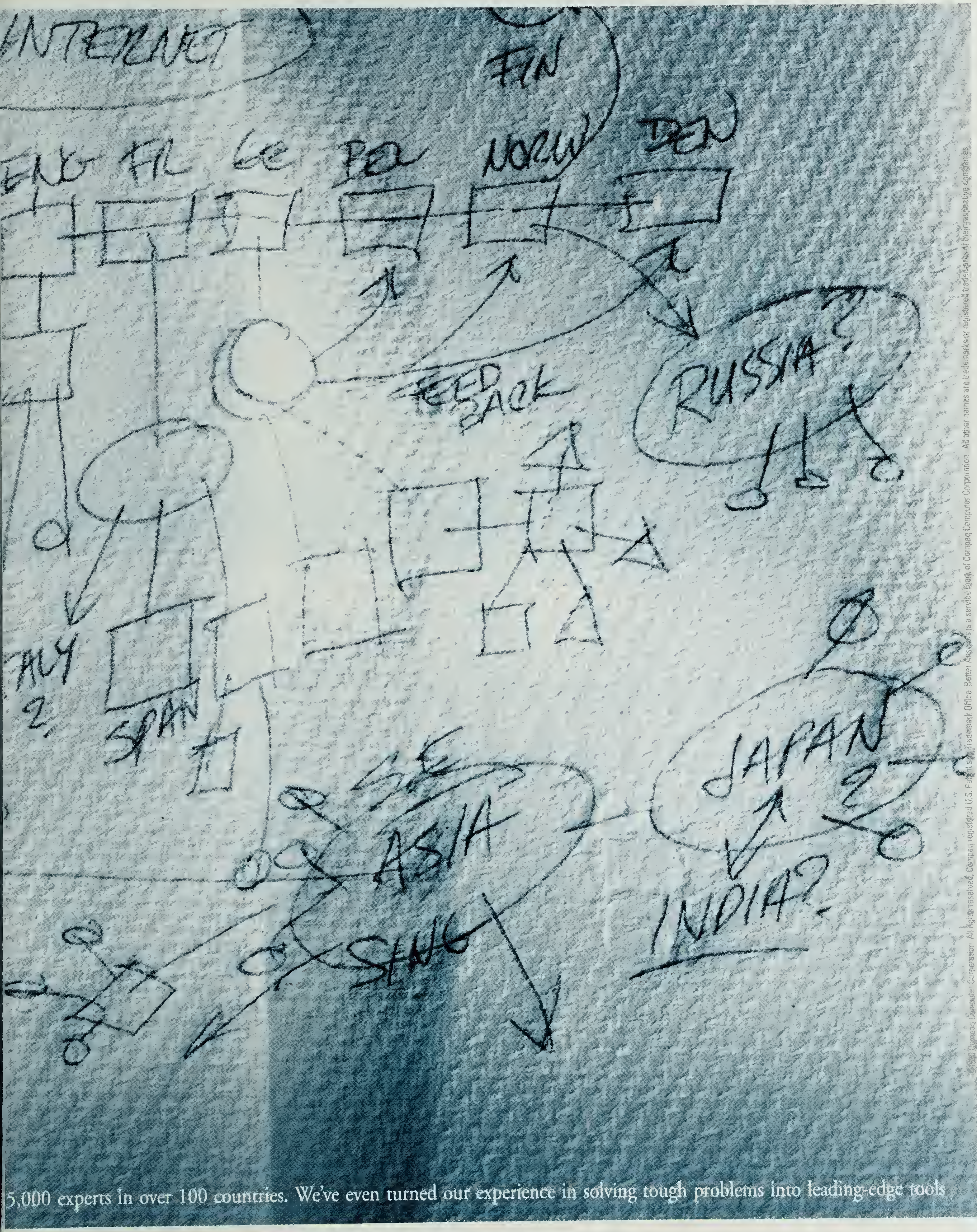
and products, offering them directly or over the Web to partners, resellers and customers

Better answers.℠



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Harmonic

The systems created by the three Premier 100 winners are impressive: They offer a high degree of service to customers. And therein, perhaps, lies the Achilles' heel of sales/service/electronic commerce convergence.

No matter how much you do, it may never seem to be enough.

By Allan E. ALTER

THE WEB, SAYS THE BUZZ, smashes business models.

It's a bulldozer, plowing out new business channels. Just look at the way Amazon.com, Inc. has turned bookselling upside down.

But what if you're a distinguished old company that charges a premium for its services? Isn't the Web a threat? What if you're a middleman? Won't some Webpreneur find a new way to reach your customers and whisk them away?

Not necessarily, several Premier 100 companies are showing. Full-service broker Paine Webber Group, Inc., full-service banker Fleet Financial Group, Inc. and Tech Data Corp., a full-service wholesale distributor of computer products to resellers, are all sticking – successfully, so far – to their business model.

What their strategic information technology initiatives have in common is convergence, says Richard L. Nolan, a well-known Harvard Business School professor who teaches a course called Competing in the Information Age. Those three companies are implementing systems that meld electronic commerce, customer service and sales-force automation so completely that it's almost impossible to say where the service ends and the selling begins.

Paine Webber

Target 2000 is the New York company's *other* year 2000 project: attaining a set of aggressive financial goals, including reaching $1 billion in recurring fees and $500 billion in assets under control.

Changing its strategy and chasing the discount

Nicholas Wilton

Premier 100 strategic initiatives combine E-commerce, customer service and sales-force automation

brokers won't get them there, says Paine Webber chief information officer Scott Abbey.

"If you look at the value the market puts on a transaction, it's approaching zero," he says. "You can get a transaction for $10 or $12. That's not a very attractive business."

Instead, Paine Webber aims to provide such compelling advice and service that investors will gladly pay a premium in recurring fees. Such a goal requires a "life-cycle" approach to investing, Abbey says.

It starts with financial planning and then continues with asset allocation, purchasing investments and performance management, all in a continuous loop.

To support that strategy, Abbey and the technologists at Paine Webber are deploying a new tool called ConsultWorks, a workstation-based system developed internally. It runs on Windows NT and is networked to central servers and mainframes at Paine Webber's Weehauken, N.J., facility. "A lot of what we had in the past was transaction-oriented," Abbey says. "What [brokers] wanted were applications that were centered around a consultative investment process."

For example, when brokers decide to log on to ConsultWorks in the

Continued on page 16

Convergence

CONTINUED FROM PAGE 15

morning, they might see stock data or new research reports on securities that they're following for customers, or a reminder to call a client about reinvesting a bond that's about to mature. Then, when they talk to clients about their portfolios, ConsultWorks will suggest questions to ask and will help the broker make recommendations. In addition, there's an Internet-based version in beta called ConsultNet.

Nearly 70% of those using **the most-strategic** applications of Premier 100 companies are in customer **marketing or sales**

"What they are bringing out is very powerful and future-oriented," according to Michael Treacy, a Boston-based consultant and co-author of *The Discipline of Market Leaders*. The broker has evolved from stock picker to asset allocator, and Paine Webber is "bringing out a tool that's where their sales force role is evolving to, rather than automating the past," Treacy says.

Fleet Financial

Fleet hasn't announced goals like Paine Webber. It's simply after profits and "share of wallet" – winning the biggest possible chunk of its clients' financial services business. Its strategy is to offer a broad retail banking product line (including credit cards, mortgages, mutual funds and discount brokerage services) and to target small businesses.

The Boston company is looking to the Web to do much of the work, says Dennis Rygwalski, executive vice president and manager of systems development at Fleet Technology Solutions in Providence, R.I.

For a while now, Fleet's Web site has offered customers a way to get account and balance information. In July, Fleet went beyond "static" information to Web-based banking, Rygwalski says. The result is that its customers can now transfer money, pay bills and download information onto their home PCs.

"The next thing on our drawing board," he says, "is the transactional level" – opening new accounts, taking out loans and applying for credit cards.

Fleet has long offered its big business customers such services as cash concentration (moving cash from numerous local accounts into one designated corporate account) and same-day check clearing, all done though a customized PC-based system. The company is currently designing an Internet browser-based system that will make those services available to small businesses as well.

Art Gillis, a Dallas-based veteran consultant in IT banking, says Fleet is way ahead of other banks in recognizing the cost savings from electronic commerce and Internet banking.

But being first may not be a blessing, he adds. The reason? Consumers have been slow to embrace Internet banking, and leading-edge banks – Fleet among them – may end up spending a lot of money while they sit and wait for the marketplace to catch up, Gillis says.

Tech Data

Tech Data Corp., based in Clearwater, Fla., has an impressive lineup of electronic commerce offerings. It had better: As a computer products distributor facing strong competitors, the company is under a great deal of pressure, not only to provide great service, but to reduce its clients' overhead costs.

"Our customers want more flexibility in ordering products and the simplest way to do it," says Dusty Williams, director of electronic commerce. Williams and CIO David Duncan can tick off one free service it offers after another:

- A Web site where customers can browse through Tech Data's entire catalog, get product information and pricing, check availability, put together a quote and hold it for a week before ordering, place the order and check order status.
- Connection Agent, a tool that does the back-office work for its clients' Web sites. Tech Data will handle catalog, order taking, shipping – nearly everything but the billing.
- Another tool lets resellers customize the Tech Data Web site to make it look like their own.
- And for clients who can already take orders on their Web sites, Tech Data is developing a way to connect clients' Web sites to Tech Data's own back-order system, which is expected to be ready by next year.

Those systems have helped Tech Data boost its sales 130% in two years.

Like its competitors, Tech Data offers "channel-assembly" services, performing the actual manufacturing of its suppliers' products. In the final quarter of this year, Tech Data will have a configuration tool on its Web site. Resellers will be able to design online the product they want and make sure it all works together.

It's an exhaustive list of electronic commerce, customer service and sales-force automation initiatives, but Williams says they are easy to justify by sales volume, orders processed and other measures. He says those electronic tools save 15,000 to 20,000 calls per day to the company's sales force. ■

Alter is Computerworld*'s department editor, Managing.*

Illustrations By Stephen Webster

FINANCIAL/BUSINESS SERVICES

Winning Weapon

IT is a powerful tool in the financial services battle for bucks as competitors seek to secure customer relationships, increase revenue and minimize risks

By Thomas HOFFMAN

BRASH INTERNET discount brokers pitching stock deals for $8 a trade. Nouveau credit-card companies giving out frequent-flier miles in exchange for balance transfers.

It seems as if everyone's elbowing for a piece of consumers' wallets these days and making it tougher for traditional banks, brokerages and insurance companies to hold on to their share of the green.

But fierce competition brings out the best in some companies, which might explain why 24 financial and business services titans, from Aetna, Inc. to Wells Fargo & Co., lead the rolls of the Premier 100.

That competition is also leading innovative companies to find new ways to support and retain customers with the right technology. As recently as five years ago, information technology was viewed in financial services as a means to cut costs, for instance through check processing or electronic claims processing, says Octavio Marenzi, research director at Meridien Research, Inc., a Needham, Mass., finan-

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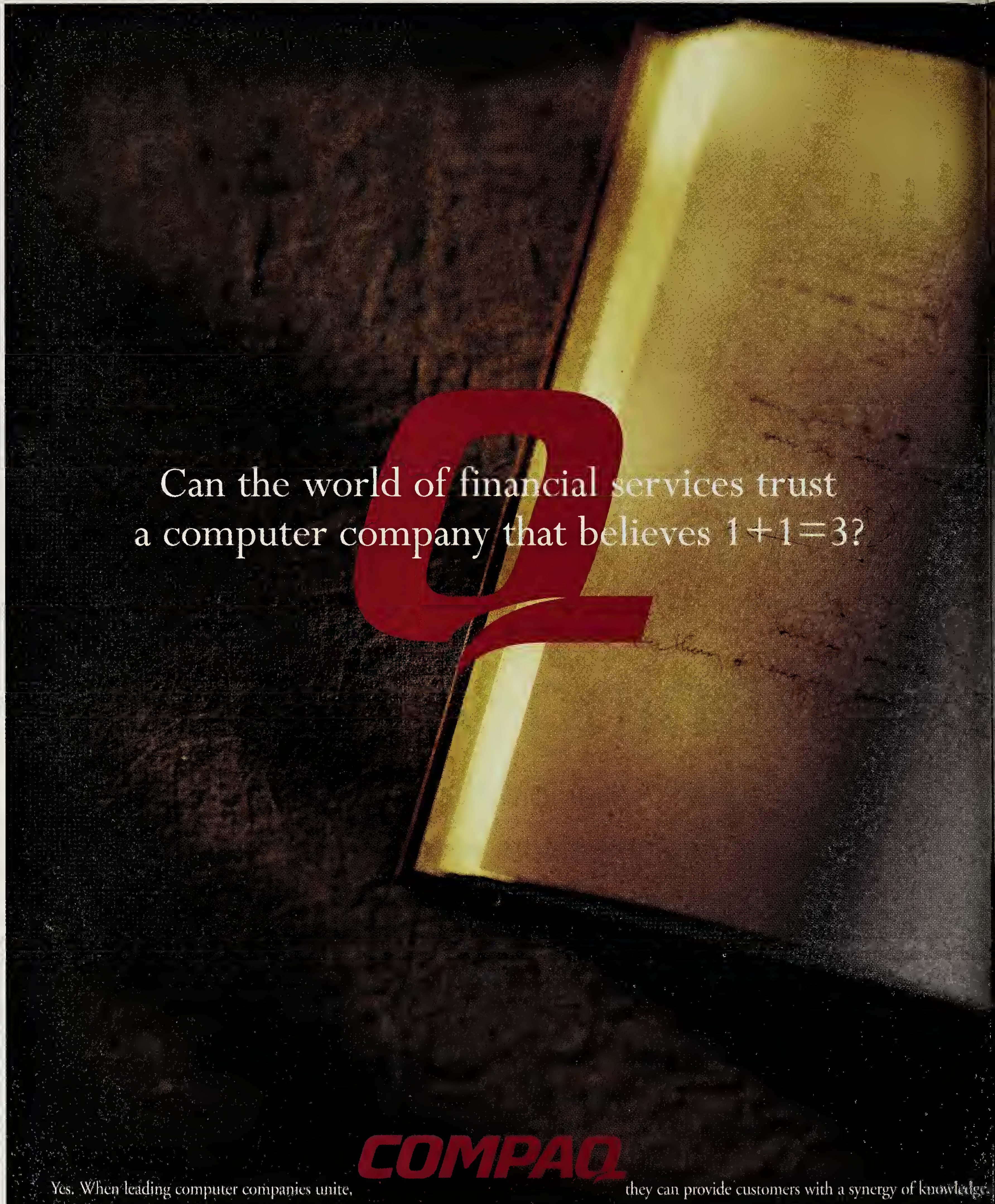

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PREMIER 100 IN FINANCIAL/BUSINESS SERVICES

Aetna, Inc.
American Express Co.
American Family Insurance Group
The Charles Schwab Corp.
Cigna Corp.
Citicorp
First Chicago NBD Corp.
First Data Corp.
Fleet Financial Group, Inc.
Freddie Mac
The Hartford Financial Services Group, Inc.
J.P. Morgan & Co.
Mellon Bank Corp.
Merrill Lynch & Co.
Metropolitan Life Insurance Co.
National City Corp.
Northwestern Mutual Life Insurance Co.
Paine Webber Group, Inc.
The Progressive Corp.
The Prudential Insurance Co. of America
State Farm Mutual Automobile Insurance Co.
State Street Corp.
USAA
Wells Fargo & Co.

In the financial services industry:

- Customer service employees are the biggest users of most strategic applications, say 75% of respondents.

- Sales-force automation is a top business-critical project for 39% of respondents.

- Half say that less than 10% of their business-critical applications use the Internet.

CONTINUED FROM PAGE 17

cial services consultant.

Now, IT is seen as a competitive weapon to help banks, brokerages and insurers better manage their customer relationships and minimize risk exposures in turbulent markets, Marenzi says.

Although year 2000 is the biggest project most of those companies have under way, managing the date change "doesn't provide competitive advantage other than allowing you to stay in business," says Bill Elliott, First Chicago NBD Corp.'s chief information and technology officer. (First Chicago merged with Banc One Corp. to form Bank One Corp. in October.)

Keeping customers

Elliott says the bank's next biggest project is the development of an enterprise customer information system (ECIS), intended to help the bank glean a complete picture of each of its customer relationships.

Based on Computer Sciences Corp.'s Hogan system, a software package for financial institutions to support budget, planning and customer information, First Chicago's ECIS will begin to roll out this month to its corporate banking division, followed by its middle-market and retail businesses later this year and early next year, Elliott says.

The ECIS project, he says, will cost more than the bank's $30 million-to-$40 million SAP America, Inc. enterprise resource planning system, targeted for completion by the end of this year.

First Chicago plans to use a module from the SAP package to measure the profitability of its customers. The system will use customer data from the ECIS to identify opportunities to sell profitable products to targeted customers.

Projects aimed at customer retention and leverage have taken center stage in financial services.

One such effort is The Progressive Corp.'s Immediate Response Claims Philosophy. The auto insurer has spent two years setting up each of its claims adjusters with laptop computers and radio frequency modems to collect up-to-date information and to resolve coverage issues for customers who report automobile accident claims.

The new system cuts down the cycle time for processing a customer's claim to seven days or less in most cases, according to Glenn Renwick, technology process leader at the Mayfield Village, Ohio-based company.

The Prudential Insurance Co. of America has a $100 million sales-technology initiative under way. Project Launchpad has the Newark, N.J., company equipping each of its 12,000 sales agents with laptop computers and sales, illustration and analysis applications.

The pilot, which began last year with 500 agents, outfitted salespeople with fresher marketing materials and demographic analyses. The result was an average first-year commission credit increase of 150% for all salespeople involved, says Prudential's chief systems architect, Pete Lacovara.

Metropolitan Life Insurance Co. recently completed a $45 million laptop sales force project. Now the New York-based insurer is replacing the IBM 3270 terminals in its four call centers with $22 million worth of Windows-based workstations.

The new systems provide 1,500 customer service representatives with customer account information and are improving call center productivity, says Jim Klinck, vice president of application development.

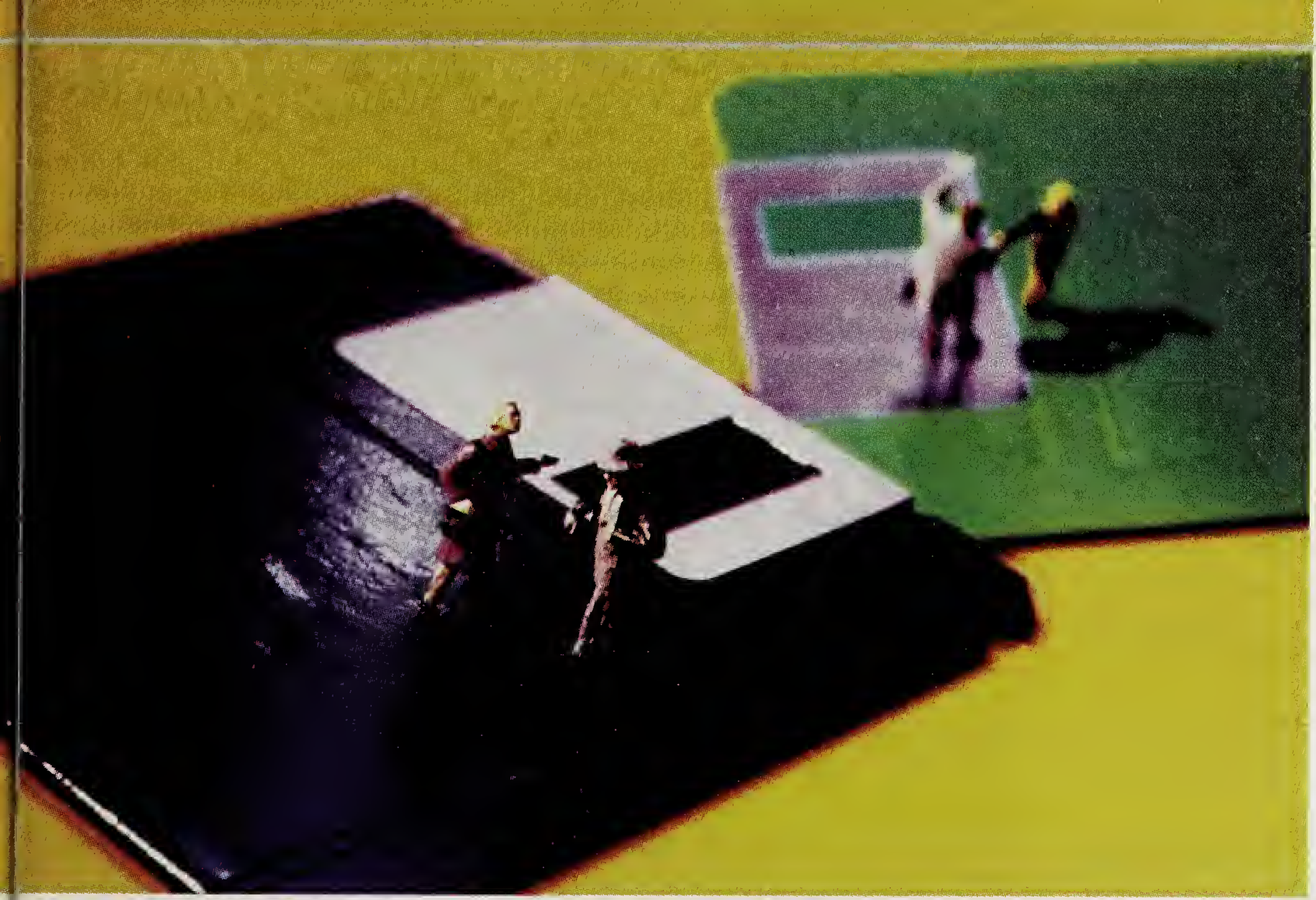
Cutting costs

Revenue-generating projects are king, but that doesn't mean that cost-saving endeavors are out of vogue. By focusing on a buy-vs.-build approach to application development, Paine Webber Group, Inc. recently finished a client-oriented system in half the time it took one of its major competitors, says CIO Scott Abbey.

Before he joined the New York brokerage in 1996, Paine Webber took a great deal of "pride in developing solutions that were closely tailored" for the company, Abbey says. The problem with that, he says, is that whatever competitive advantage a company can wrest from a development project isn't sustainable.

Many of Abbey's Premier 100 peers have discovered that as well. ■

Hoffman is Computerworld*'s senior editor, IS management.*



INFORMATION TECHNOLOGY

Eating Their Own Dog Food

Whether proving ground or showcase, IT departments of Premier companies are counted as business partners

By Suruchi MOHAN

WHEN YOU HAVE TO follow your own prescription, you become more careful about what you prescribe.

At least that is what three high-stakes Premier 100 players in the information technology industry say. When they tell customers how to excel through the use of their own information technology, they have to make sure their own enterprise is growing through the use of that technology.

"Eating our own dog food" is how Microsoft Corp. insiders refer to the process of testing their products to see if they run well in the environment for which they were created. "We've got thousands of armchair CIOs at Microsoft just waiting to pounce," says Frank Holland, general manager of information technology integration and planning services at the Redmond, Wash.-based company. "If they feel we're doing something silly, they're quick to let us know," he says.

Making an example out of their technology is considered to be important by most Premier 100 technology companies, many of which render their own variation of the eating-your-own-dog-food theme. Palo

Continued on page 22

PREMIER 100 IN INFORMATION TECHNOLOGY

3Com Corp.
Applied Materials, Inc.
AT&T Corp.
Automatic Data Processing, Inc.
Cisco Systems, Inc.
Compaq Computer Corp.
Computer Associates International, Inc.
Dell Computer Corp.
GTE Corp.
IBM Corp.
Ingram Micro, Inc.
MCI Communications Corp.
Microsoft Corp.
NCR Corp.
Oracle Corp.
Silicon Graphics, Inc.
Sun Microsystems, Inc.
TRW, Inc.
Unisys Corp.
Xerox Corp.

In the IT industry:
- Electronic commerce is a top business-critical project for a quarter of the respondents.
- An average of 12% of 1998 IT budget will be spent on consulting and outsourcing.

CONTINUED FROM PAGE 21

Alto, Calif.-based Sun Microsystems, Inc., for example, shows Sun.net, its encrypted Internet Protocol tunnel, to customers and to prospects interested in accessing information through an Internet provider without kludgy modem pools. It also shows approximately 3,000 JavaStation network computers.

"We use (IT) to display the power of the (Sun) platform," says Mike Lehman, vice president of corporate resources.

Stan Lepeak, vice president at Meta Group, Inc. in Stamford, Conn., sees the idea as part of a growing trend among Fortune 1,000 companies. "IT (departments) are becoming a legitimate partner within companies," he says.

But showcasing its own products isn't the only way to align technology and business. The novelty of Dell Computer Corp.'s business model and its speed of growth present unique challenges. The Round Rock, Texas, corporation grows $1 billion every two months – $6 million of business comes daily through its Web site, as well as the 800 number displayed on it.

Dell has identified two areas critical to supporting its continued growth, says chief information officer Jerry Gregoire. First, Dell has adopted a new architectural approach – called G2 – that integrates all legacy and new applications via its intranet and extranet. And second, the company established what it calls a customer experience council, which is aimed at finding ways to improve the experience of buying a Dell computer. Dell customers now log on to Web-based systems that redirect inquiries to legacy systems via custom-built middleware. In two years, users will be able to directly access Dell's legacy system through the Web.

Gregoire says that G2 "erases the line between E-commerce and our core transaction system" that handles tracking inventory, order entry and accounts receivable. Until recently, manual entry was required to get from one system to the other.

"This technology allows us to make information available in real time to our vendors," he says. "We can't make improvements without that capability." ■

Mohan is a freelance writer in Los Altos, Calif.

WHOLESALE/RETAIL

Timing is Everything

In the cutthroat retail and wholesale market, an efficient supply chain provides a competitive edge

By Cheryl GERBER

IN THE HIGHLY competitive worlds of retail and wholesale, there are no exceptions: Strategic use of technology is a prerequisite for survival in the market.

Premier 100 retailers and wholesalers rely heavily on integrated standard technology to move the right mix of merchandise through the supply chain at the right time.

"It's about timeliness and accuracy. We must be a dynamic organization because the customer mix and order makeup changes every day," says Larry Pulliam, chief information officer at food distributor Sysco Corp. in Houston.

"All big retailers have to have a closed-loop, fast, end-to-end system to keep stores in stock," says Vivian Stephenson, CIO at Dayton Hudson Corp. in Minneapolis.

Sears, Roebuck and Co. also has kept an eye on integration as it has rolled out three strategic cus-

PREMIER 100 IN WHOLESALE/RETAIL

Ace Hardware Corp.
CompUSA, Inc.
Dayton Hudson Corp.
The Home Depot, Inc.
J. C. Penney Co.
The Kroger Co.
The Limited, Inc.
Sears, Roebuck and Co.
Sysco Corp.
Tech Data Corp.
Tyson Foods, Inc.
Walgreen Co.
Wal-Mart Stores, Inc.

In the financial services industry:

- Less than 10% of business-critical applications use the Internet, say 65% of respondents.
- Using IT to gain efficiencies within the operation is a business-critical challenge facing 59% of respondents.
- Business unit managers decide which business-critical applications are built, say 60% of respondents.

tomer service projects – big-ticket home delivery, merchandise pickup and assortment planning. By using its Enhanced Home Delivery System, Sears can deliver large appliances within a two-hour time frame, says Graham Waller, systems director at Sears. But the Hoffman Estates, Ill., retailer's most strategic project may have been Sears Assortment Planning System, which balances centralized buying with customized product assortment.

Sears' use of technology for business goals is characteristic of Premier 100 companies in the market.

"Retailers who have successfully used information technology know they need a solid business case for the adoption of technology," says Vahe Katros at Retail Systems Alert Group, a retail technology industry analysis and news provider. Katros, an editor at the Newton, Mass., company, says the most common business case is to improve customer service.

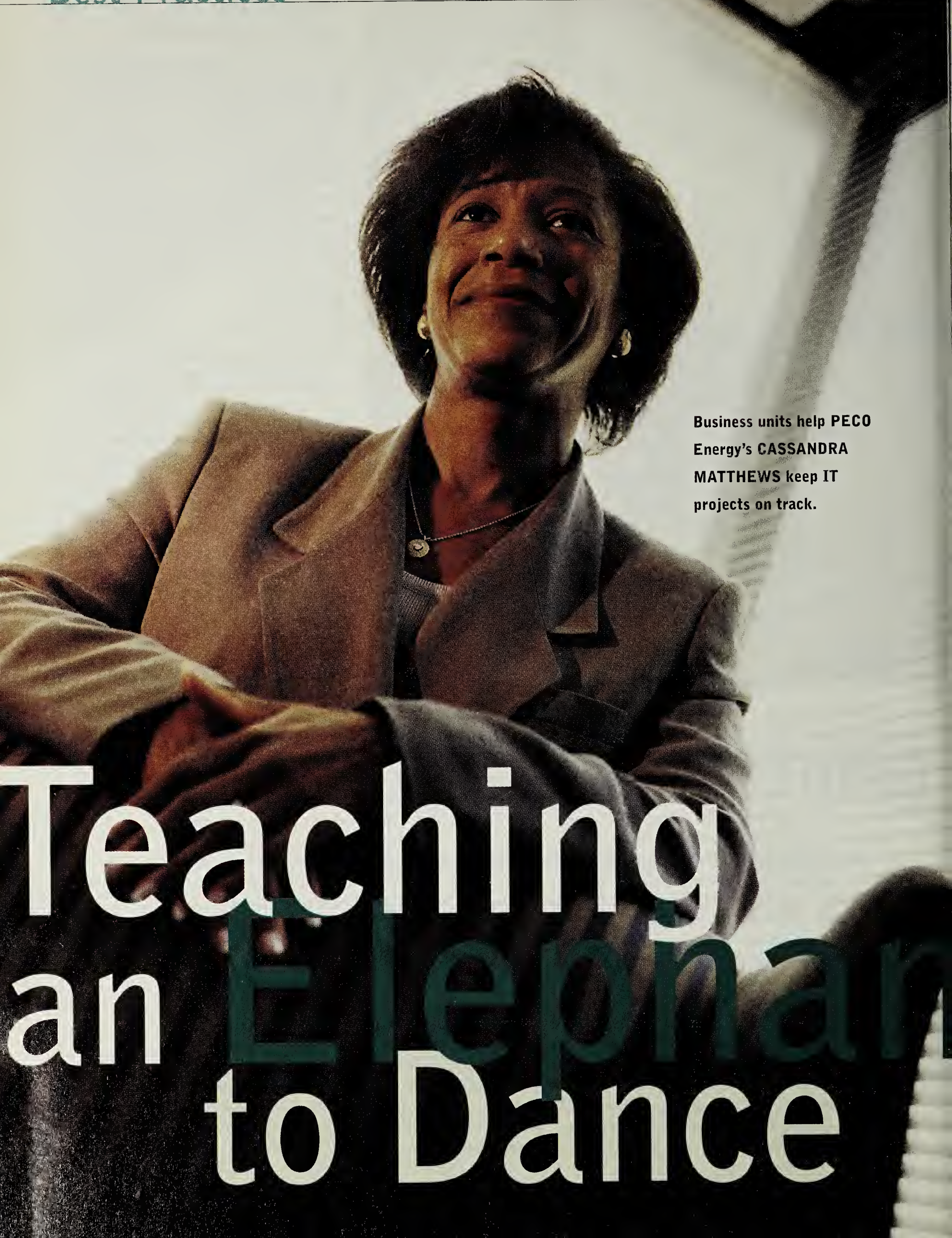
Each company has specific areas of focus. Wal-Mart Stores, Inc.'s use of mobile and wireless computing has improved inventory management, says Randy Mott, CIO of the Bentonville, Ark., company. A typical Wal-Mart store now has 15 to 30 Telxon Corp. handheld mobile systems equipped with retail-specific applications and integrated with back-end store systems, giving merchants data to make forecasts and adjustments on product assortment and rate of replenishment.

Timeliness is of even greater urgency in the perishable food business. Sysco's Warehouse Management System directs food products to the correct location in the warehouse using defined food storage requirements, then continuously tracks movement. The company is also piloting a Web-based order-entry, tracking and reporting application set to launch early next year, Pulliam says.

Tyson Foods, Inc. was one of the first wholesalers to use Web-based electronic commerce when it built an extranet for its brokers a year ago. The use of de facto standard products and an IP-based network made Web enabling the existing applications happen quickly and easily, says Gary Cooper, CIO at the Springdale, Ark., corporation.

"As the expectations of customers continue to rise, we will use technology in innovative ways to meet the expectations," Sears' Waller says. ■

Gerber is a freelance writer in Kingston, N.Y.



Teaching an Elephan to Dance

Business units help PECO Energy's CASSANDRA MATTHEWS keep IT projects on track.

To keep up with the changing global economy, top IT strategists rely on speed, communication and cooperation, from the top of the organizational chart on down

By Alice LaPLANTE

CASSANDRA MATTHEWS HAD A tough decision to make. And she had to make it quickly.

As chief information officer of PECO Energy Co., a $4 billion public utility in Philadelphia, Matthews was preparing for the Wild West of utility deregulation – when consumers and businesses could choose their energy provider. Early last year, she corralled representatives from all PECO business functions as well as top technologists onto a single floor of a PECO building. The group was charged with replacing the legacy system that managed all billing and customer-service activities into one that could work under the new regulations. By November of that year.

The problem: The energy industry's regulations were still in flux. Even after PECO chose a leading software package to replace its inhouse Cobol system, the regulations kept changing.

Welcome to information systems in the 1990s. When competitive business environments are changing as quickly as technology does. When understanding the information technology needs of independent businesses, divisions or even departments is critical. But when a unified IT vision for the enterprise is also of prime concern.

"Our biggest challenge is figuring how to move from an international business to a global one," says Art Levin, CIO of medical supplies behemoth Becton, Dickinson and Co. in Franklin Lakes, N.J.

This is not an exercise in semantics. Premier 100 CIOs such as Levin don't want to squelch the kind of entrepreneurial spirit that leads separate business divisions, departments, workgroups or even individuals to come up with technology-based solutions that fit their needs. Yet CIOs must also balance how IT can best serve local needs with a more holistic approach that leverages enterprisewide operational efficiencies and, more significantly, competitive knowledge across the globe.

It's the old story of ensuring the business effectiveness of IT. It's the age-old debate of whether a centralized or decentralized organization best suits a particular firm. But it's an exchange intensified by the biggest economic boom in decades, by massive deregulation and globalization across a broad spectrum of industries and by new business opportunities enabled by the digital economy.

Bucking the odds

Premier 100 companies are doing this by focusing on speed, buy-in from above and below, and continuous feedback from interested parties – both technologists and end users throughout the enterprise.

"We're finding CIOs in a real bind," says Bruce Brown, president of InforMission, an IT management consulting firm in Fremont, Calif. As IT organizations scramble to put complex systems in place to meet ever-changing business needs, "the odds are against them and they know it," he says. Of primary importance: timely and meaningful communication. "Otherwise, it's like a bad marriage," Brown says. "The same stuff gets discussed over and over again, with no resolution. Or decisions are made that benefit one party but not the other."

Speedy delivery

PECO provides an example of how to do it right. Matthews chose a team for the important re-engineering project that included technological experts, of course, but also masterminds from every business function throughout her electricity generation, gas storage and power station management departments. Each kept Matthews informed of how the fluctuating regulations affected their business functions so she could track the project on a macro (enterprisewide) as well as micro (business unit) level, then act with appropriate speed.

The speed part is critical. An honors list of Premier 100 companies completed their most important business IT projects in record times this year. Ingram Micro, Inc. in Santa Ana, Calif., and PECO Energy, among others, finished their most important IT projects within a startling five months.

More than a third are completing an impressive 75% of IT initiatives within required time and budget limits. And increasingly, the time limits are tight.

At PECO, as energy deregulation continued at a furious pace, "gaps appeared between what the chosen software package could provide and what our various businesses needed," Matthews says. By May, Matthews' team had pushed

Continued on page 30

CHRIS HARTLOVE

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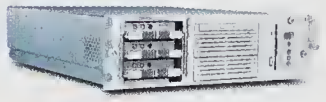

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CONTINUED FROM PAGE 25

the package to its limits. By June, Plan B was put into motion – appointing a team to begin evaluating whether modifications to the existing legacy system were an option. By August, Matthews made the decision: Kill the package and devote all resources to revamping the legacy system.

By September, the regulations were finalized. The newly revitalized legacy system was able to accommodate all the last-minute changes and immediately began churning out bills by the November deadline.

"We made the right decision," Matthews says. But it was made only through constant and effective communication.

Dave Carlson agrees with this approach. As the chief technology officer at Ingram Micro, a $16.5 billion distributor of technology products, Carlson keeps his worldwide troops informed on all major IT initiatives with a personal report distributed via E-mail and Ingram Micro's global intranet. He shoots it off whenever necessary. "Sometimes that's every few days, and sometimes it's every few weeks," he says.

More than a third of Premier 100 respondents say their information technology projects come in on schedule – not to mention on budget – from 75% to 100% of the time

Currently, there are 90 items on his list, ranging from developing a new Oracle manufacturing suite to support Ingram's new Frameworks custom-assembly initiative to improving rebate processing for wholesale customers.

NCR Corp. also has a long list of projects. Sam Coursen, CIO at the $6.5 billion systems giant, was told this past year that the heart of NCR's core business would switch from a country-by-country to a global focus. These changes encompassed NCR's vast retail (point-of-sale systems), financial (automated teller machine systems), computer business (hardware and software) and services (maintaining client systems) organizations.

Coursen was told this would be effective immediately. "And, of course, this affected all our core systems," he says. In the past, Dayton, Ohio-based NCR ran each country – within each business unit – as a separate entity, and "our systems infrastructure mirrored that," he says. No longer. Now, by rapidly designing and implementing a series of enterprise global warehouses, "we are beginning to provide a global view of NCR across all businesses and all geographies," he says.

How is he transforming IT so quickly? Through a complex IS structure that depends on close collaboration – and gets direct buy-in from the top of the company. A corporate IT board, which includes Coursen, the CEO and heads of all NCR divisions, meets quarterly. Business-specific boards that meet monthly come up with projects that conform to corporate (global) priorities and fit the needs of that business. Below that, the troops get going, and keep in close touch with liaisons who monitor how the IT activities within a division are going. The liaisons frequently report back to Coursen.

Also of primary importance for Premier 100 best-practice success: getting top-down support for major IT initiatives.

General Mills, Inc. in Minneapolis recently implemented SAP AG's R/2 throughout its enterprise. It's considered a success, says Sue Simonett, a director of IT at the $6 billion packaged foods company, but only after trying and trying again. "We were stretching the hardware beyond its limits," she says.

For starters, initial response time to basic production processing was "just horrendous," she says. General Mills line workers were required to work round-the-clock shifts just to finish a single production run. Workers were not pleased. If not for unwavering support from senior management throughout all business units, the project undoubtedly would have failed, she says.

The heartland approach

To illustrate the other organizational end to accountability, look at Wal-Mart Stores, Inc. in Bentonville, Ark. As befitting the heartland ethics of the $118 billion retail phenomenon, CIO Randy Mott believes in a grassroots foundation for IT.

This approach is the only way to make sure the technology initiatives his team sponsors are flexible enough to suit independent stores, but encompassing enough to serve the Wal-Mart network of nearly 3,000 retail outlets.

"Our stores range from 29,000 square feet to more than 200,000 square feet, and we don't want to tell our managers how to run their businesses," Mott says.

He meets twice a year in a town hall-style meeting with all store and district managers. "They're not uncomfortable telling us what they think," he says. Detailed lists are kept of items brought up during the meeting, and at the next meeting, each item is accounted for. "We believe this kind of response is essential to make sure they know we are listening," Mott says. ■

LaPlante is a freelance writer in Woodside, Calif.

LIVING WITH AMBIGUITY

Some chief information officers might be tempted to become more autocratic in the face of uncertainty. Art Levin isn't one of them.

As CIO at medical device manufacturer Becton, Dickinson and Co. in Franklin Lakes, N.J., Levin prefers that everyone in his global domain shoulders more responsibility and "learns to live with ambiguity." That's because uncertainty – or ambiguity – is going to be the norm from now on.

When Levin took over Becton, Dickinson's worldwide IT operations 18 months ago, he found 17 independent IT organizations, each capable of going in its own direction. Rather than eliminate this diversity, Levin decided to harness it to bring together the IT units and their corresponding business customers and build a common infrastructure they could all live with. He did, however, pare the 17 organizations to 11.

So in April 1997, Levin called together the heads of the 11 remaining IT groups to come up with a comprehensive blueprint for the Genesis Project – Becton, Dickinson's attempt to define a common technological foundation. A senior vice president from the company's corporate office chaired the effort; 32 other senior managers from around the globe – both IT and business experts – committed themselves to the job full time.

The company hired the consulting firm Deloitte & Touche to provide guidance. And by August, "we successfully got those 11 teams to agree to a single vision," Levin says. They chose SAP as the enterprise resource planning package of choice worldwide. The people who would have to live with other architectural decisions approved them: Lotus Notes as the standard workgroup collaboration tool and Microsoft Office as the standard desktop suite, among others. Then they all pretty much went their separate ways.

"This does not mean that everyone does everything they want to do," Levin says. Rather, it means that by using a standard technological foundation, the various independent entrepreneurial visions can be facilitated. "We've agreed to work locally and to administer systems locally, but to lead on a worldwide basis," Levin says. — *Alice LaPlante*

Becton, Dickinson's ART LEVIN: "This isn't a lines-and-boxes kind of company. We work in a very collaborative environment."

By Joanie WEXLER

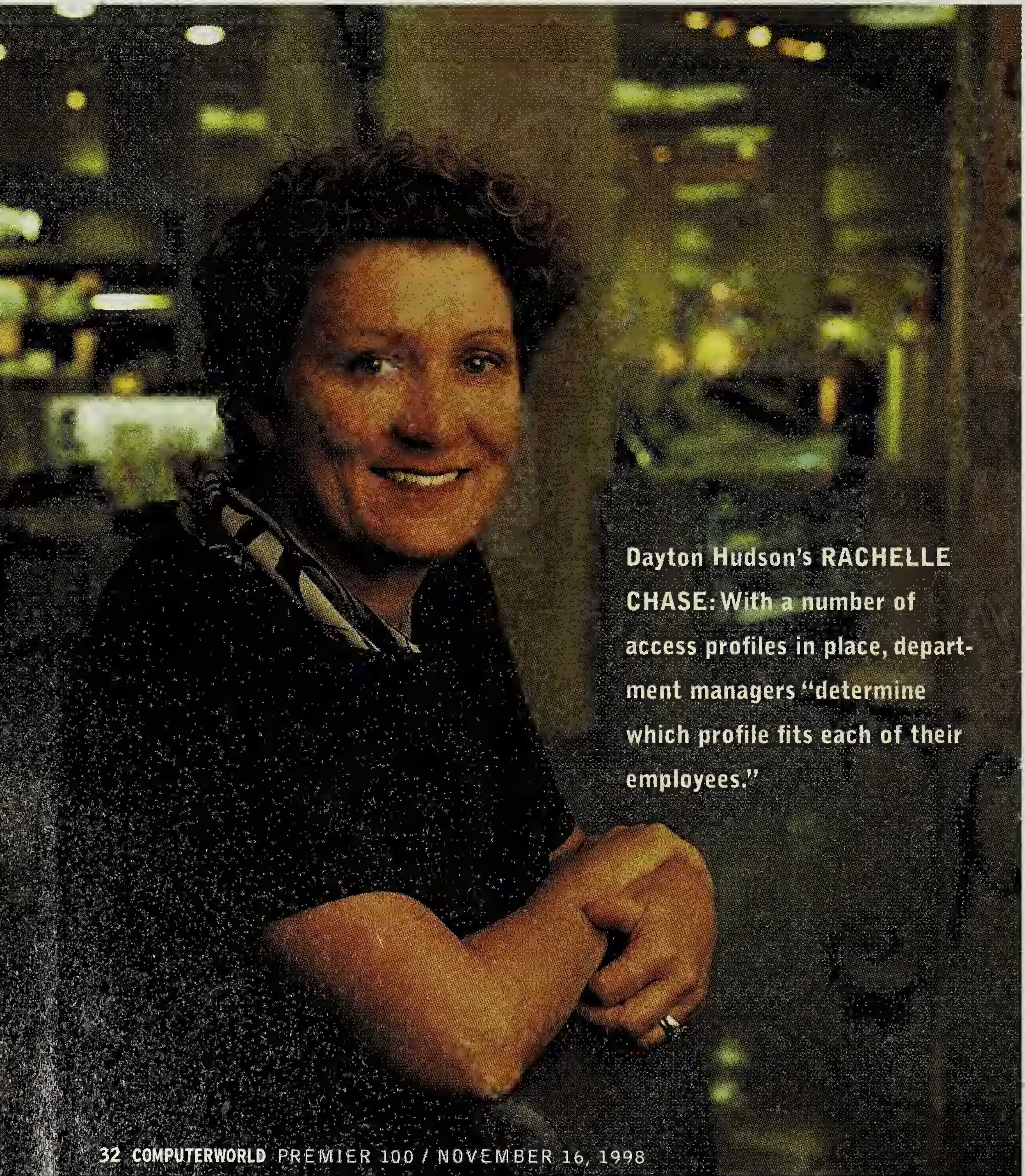
"THE 'S' WORD IS BACK."

That's how one Premier 100 IS manager sums up the way his organization is getting its arms around managing widespread user access to corporate data resources worldwide. "It's all about standards – whether they are industry standards or our own," says Gerry Gorman, manager of the infrastructure services division at Caterpillar, Inc. in Peoria, Ill.

Several years ago, corporate standards were on the way out at Caterpillar when the information systems department decentralized, Gorman says. Now they have returned, and form the foundation of Caterpillar's access-control strategies.

Many of the Premier 100 are relying on formal access policies, common operating systems and standard desktop and laptop configurations for the compatibility needed to ensure access to users. To provide this access while also protecting corporate data, most companies implement basic security for internal users but require additional safeguards when partners and suppliers tap in to their extranet. And nearly all companies are clamoring for rich, integrated directory services to ease the job of maintaining multiple user lists for the applications their companies support.

Premier 100 IS managers say their approach of running common operating systems and application suites enterprisewide allows them to give users consistent access rights regardless of whether they are accessing resources locally, from the company's private wide-area network, over the Internet or via a dial-up link.



Dayton Hudson's RACHELLE CHASE: With a number of access profiles in place, department managers "determine which profile fits each of their employees."

Per Breiehagen

Why is this important? "There are synergies among our various retail companies," says Bill Aerts, senior manager of information security at Dayton Hudson Corp. in Minneapolis. The company is moving to a Windows NT environment across all its companies. Dayton Hudson operates five retail chains. "Secure systems and applications that work the same way across all our companies allow users to share creative ideas," Aerts says.

Tom Thomas, chief information officer at 3Com Corp. in Santa Clara, Calif., agrees that common systems – and networks – are necessary: "When your enterprise is standards-based, the round pegs fit in the round holes. Compatibility is the key to access."

Who goes where?

Premier 100 and other IS departments have their work cut out for them to define and administer access for thousands of distributed users. IS departments must determine how to provide access without putting the organization's data at risk.

To set up access lists, several companies are creating data profiles and then mapping individual users to the profiles based on job function. Dayton Hudson, for example, has formed an information security review board to inventory data resources throughout the company.

"There are now a number of standard access profiles at the company, and department managers determine which profile fits each of their employees," says Rachelle Chase, director of electronic commerce.

Giving users the access they need to be productive and creative while pro-

Access Granted

To provide entry without putting their data at risk, Premier organizations depend on formal standards and common software configurations

tecting corporate data is a delicate balancing act, not to mention a heavy administrative burden. Most companies require a user ID and a separate password for each resource a user accesses. This multipassword setup requires IS departments to maintain access lists for every application or other resource, and most companies are seeking a secure way to pare down to a single user log-on that will open all the authorized doors. Smart cards, which dynamically change passwords, are "the most applicable to the most organizations," says Richard Power, a director at the Computer Security Institute in San Francisco.

Outsiders on the inside

Trusted partners such as suppliers and business partners have become users on many Premier 100 networks. But they tend to follow a different path to their resources and use different security measures than internal users.

Some Premier 100 companies have outsourced their extranet server hosting functions, in part to keep the extranet Web servers off their own networks.

Sears, Roebuck and Co. in Hoffman Estates, Ill., outsources most of its extranet, but the company will allow some access to its premises to trusted outsiders using an ID and password with Netscape Communication Corp.'s Secure Sockets Layer private key encryption, says Bob Uhrina, systems manager for Internet systems management.

Sears is also in the process of exploring tunneling and proxy server alternatives for other measures of extranet security, notes Kevin Miller, Sears' director of systems management.

Dayton Hudson has formed a partnership with General Electric Information Services (GEIS) to build Partners Online, an extranet application it is currently rolling out. The application sits on a GEIS database populated by Dayton Hudson information, Chase says. "For example, Procter & Gamble will be able to access profitability data on its product lines in our stores using an ID and password, but they will not be able to see Rubbermaid's – or any other partner's data," she says.

A big push among IS shops is for a meta directory that combines user information from different directory applications into one.

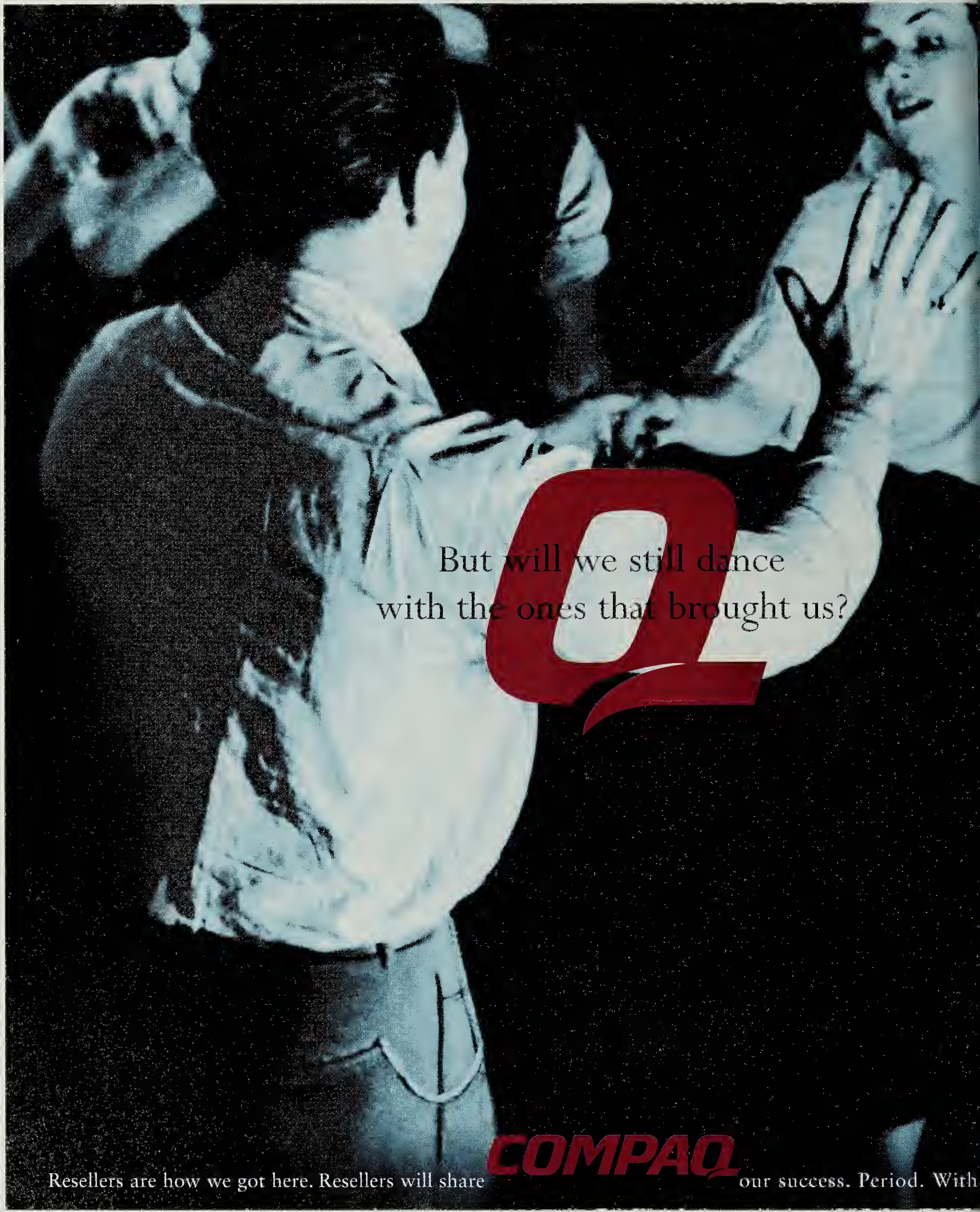
"A common directory is critical to our goal to install a common authentication scheme to reduce complexity and cost," says 3Com's Thomas.

Adds Dave Berger, manager of engineering systems and distributed computing services at Caterpillar: "The single thing holding up the Internet is directory services." To help solve the problem, Caterpillar is involved in the Lightweight Directory Access Protocol (LDAP) movement to integrate directories from different application vendors and provide an industry-standard interface to them.

Dayton Hudson is eagerly awaiting Microsoft Corp.'s Active Directory Services, which is on the drawing board for Windows NT 5.0 and will contain LDAP interfaces.

While NT offers some basic access management, "the tools needed to manage thousands of user IDs aren't there today," Aerts says. "Sometimes it is technology that makes or breaks a system, but sometimes it is just simple management." ■

Wexler is a freelance technology editor and writer in Campbell, Calif.



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Outsourced, but not Outclassed

No longer seen as a last-ditch cost-cutting measure, third-party contractors generate business value for successful companies

By Julia KING

This year, Hilton Hotels Corp. will spend the lion's share of its $12 million corporate information technology budget on outsourcing, farming out virtually all ongoing IT operations – except its help desk – to two vendors.

The Dow Chemical Co., another big user of third-party IT services, has contracts with at least a half-dozen different vendors to handle everything from new application development to network management. Yet Dow continues to run its own mainframe computer operations.

These two cases illustrate a very simple reality: There is no one right way or reason to outsource. And even if there were, it's guaranteed to change with time, business pressures, politics and the technology itself. Indeed, about the only thing companies do seem to agree on is that outsourcing is no longer a dirty word. Nor is it a last-ditch tactic for cutting IT costs. Far from it.

By the end of the year, Premier 100 respondents say they will have spent an average of 20% of their 1998 IT budget on consultants and outsourcing. Among other things, these companies are now turning to outsourcers, systems integrators and other third-party providers to acquire technical competency, decrease their time to market and build and deliver new applications.

At General Dynamics Corp. in Falls Church, Va., representatives from outsourcer Computer Sciences Corp. (CSC) sit on the company's information technology management council. The council includes top executives from each of General Dynamics' business units and decides the corporation's overall strategic technology direction. Other Premier 100 users continue to outsource in the traditional manner of farming out all tasks that aren't unique to their business.

"We're all doing 80% of stuff the same way and may have as little as 5% that is unique," says Honorio Padron, chief information officer and vice president of process engineering at Dallas-based CompUSA, Inc., which spends a full 75% of its IT budget on third-party services. Among other things, the $5 billion computer retailer outsourced its data center operations to IBM Global Services. "I don't run my own telephone company, so why should I run my data center?" Padron says. The main virtue of outsourcing everyday operations is that it enables company insiders to focus on things that will make a real difference to the bottom line, Padron says. One area where this has paid off is finding new ways to incorporate systems into the sales process, he says.

"The whole notion of outsourcing is definitely front and center for reasons other than cost," says Gopi Bala, an analyst at The Yankee Group in Boston. "Now it's viewed as a legitimate business tool in the eyes of the CEO."

Take General Dynamics, which effectively spun off its entire 2,500-person IT organization in 1991 in its effort to morph from a lumbering defense contractor into a more nimble commercial enterprise. "The Berlin Wall was down

KEN HILL of General Dynamics: Outsourcing helped his company change from lumbering giant to nimble enterprise.

Chris Hartlove

and peace broke out, which was good, but not necessarily good for the defense business. Something had to happen," says Ken Hill, vice president of corporate information technology.

So General Dynamics decided to sell off several of its businesses, shrinking from a $10 billion company to a $3 billion company. "But one of the entanglements was IT. In order for us to separate ourselves, we first had to separate out IT," Hill says. El Segundo, Calif.-based CSC was called to the rescue.

General Dynamics is far from a desperate company today, and its relationship with CSC also has changed significantly, Hill says. For starters, General Dynamics has far more leverage than it did in 1991. In 1995, General Dynamics went back into acquisition mode, buying Bath Iron Works. In 1997, it acquired two business units from Lockheed Martin Corp. in Bethesda, Md. The new units were not under General Dynamics' original contract with CSC, "but CSC would love to get that business, so now I have some leverage," Hill says. Earlier this year, the company renegotiated its 10-year contract with CSC, cutting an umbrella deal that still lets each operating unit set its own service levels and local labor rates. CSC also agreed to reduce its desktop and distributed support fees, a move that Hill estimates will help slash costs by $30 million by 2004.

In 1996, Midland, Mich.-based Dow Chemical outsourced all new application development to Andersen Consulting in Chicago. Andersen agreed to work side by side with Dow developers in a group called The Alliance. With 300 Dow IT staffers and 300 Andersen consultants, the group was formed as Dow was moving from a regional to a global business and from a mainframe-based to a client/server environment.

"What drove The Alliance was all this change and our own determination that we needed assistance," says Bill Lehrman, manager of process and metrics at Dow.

In the past few years, "management has definitely changed their attitude toward outsourcing," Lehrman says. No longer is it perceived as the result of some internal deficiency. Instead, "it's viewed as another way of meeting business objectives." The Alliance accounts for some $85 million of Dow's 1998 IT budget of $400 million.

Outsourcing is also far more scientific than in the past. Dow, for example, has a formal outsourcing methodology, which includes benchmarking all IT activities against a database of performance statistics maintained by Gartner Group, Inc. in Stamford, Conn.

"All areas where we're not benchmarking well become outsourcing possibilities," Lehrman says. Dow even benchmarks the performance of its outsourcers, using best-practice data from Gartner Group.

At Hilton Hotels in Beverly Hills, Calif., CIO Joe Durocher says his company is first and foremost a hospitality company, not a technology company. So it outsourced computer operations and systems development to Litton Enterprise Solutions, Inc. in Woodland Hills, Calif., and its central reservation system to Phoenix-based Anasazi, Inc.

"But we're also trying to walk that thin line about abdicating technical responsibility," Durocher says. That's why Hilton also has an in-house IT group of 110 people. Of these, 70 work on the help desk or assist with new software rollouts and training. The other 40 are business experts who are highly skilled in key hospitality-related software.

"We need to know enough internally to make our own business decisions, so we may have someone who knows databases, but we'll look to the outsourcer for additional expertise in distributing or replicating databases," Durocher says.

Whether a company is outsourcing to gain a little expertise or to overhaul its systems, one thing is clear: Outsourcing is not for losing companies anymore.

King is Computerworld*'s national correspondent.*

Pragmatic Risks

Chris Lensch

Effective users turn to leading-edge technology for business-practical purposes

By Frank HAYES

BLEEDING-EDGE TECHNOLOGY? YOU won't find it in Premier 100 IT shops.

That's not to say these companies aren't using advanced information technology – including such exotica as neural nets and supercomputers. But to these users, cutting-edge technology means taking on risks – developing new and innovative technologies that aren't available in commercial products.

That's why the edgiest of their cutting-edge IT projects are far from the data center. They're in places where they can generate the greatest value to balance their high risks.

"We want to take the risk in areas where there's a large payback," says Frank Barbee, IT manager at Phillips Petroleum Co. in Bartlesville, Okla. "That means new algorithms for exploration." For Phillips, that denotes finding more than one producing well out of every dozen the company drills.

"We're innovative where it can make a strategic difference, such as in basic research," says Charles Popper, vice president of corporate computer resources at pharmaceutical giant Merck & Co. in Whitehouse Station, N.J.

Those declarations may not sit well with many IT technologists. What about Java, ActiveX and Common Object Request Broker Architecture (CORBA)? What about tools for data mining, distributed management and supply-chain systems? Aren't those the cutting-edge technologies that are shaking the foundations of traditional information systems?

Not exactly. These users say they'd rather wait until the edge is off new technology – and keep any wild, risky experiments as far away as possible from core business systems, since exposing key corporate data to those risks makes no sense at all. There's a good reason such old reliables as mainframes, Cobol and IMS still reign over most core IT operations.

Premier 100 respondents, in fact, say that an average of 70% of their business-critical applications are processed on the mainframe.

"We wouldn't embark on [cutting-edge projects] for more typical business processes such as staff-support activities," says Thomas Conarty, director of information technology at Bethlehem Steel Corp. in Bethlehem, Pa.

So the steel producer uses neural nets and artificial intelligence for real-time control of its steel mills. Phillips Petroleum uses supercomputers to analyze geological data, hoping to sink more successful wells.

That doesn't mean these and other Premier 100 companies don't make bets on advanced technology. But they'd rather be "fast followers," as Popper puts it, waiting until the odds of success are a bit more in their favor – and the edge is a little less bleeding.

Coming of age

Distributed systems, for example – accessing data and business rules on many different machines for each transaction – are beginning to come of age. "With our direct consumer marketing sales system, if I'm sitting in Colorado Springs and want a quote from a DB2 system in Cleveland, to do that transaction requires interactions with 18 boxes," says Robert Mathe, general manager of applications programming at The Progressive Corp., an auto insurer in Mayfield Village, Ohio. "Five years ago, we couldn't even envision that."

Java, CORBA and ActiveX have matured enough that aggressive companies can put them to work – though usually in noncritical applications, users say. Java was named by 43% of Premier 100 respondents as one of the most significant leading-edge technologies they use, while 11% say ActiveX and 12% say CORBA. Data mining is starting to show its promise. And some companies were exploring middleware such as CORBA – which is key to linking new and legacy systems – five years ago.

More important, these technologies are increasingly built in to products, further reducing the risks. "We don't spend time developing [Java] expertise," says Phillips Petroleum's Barbee. "If packages we purchase use Java, it just comes with them."

And some users have soured on the promises of the last generation's cutting edge. Bethlehem Steel no longer expects the dramatic improvements in programmer productivity promised by object-oriented software development. "Where's the library of reusable code going to come from?" Conarty says. "With software vendors, I see a high amount of reuse, but I'm not sure that's a good decision for Bethlehem Steel."

On average, object-oriented technologies are only moderately important to Premier 100 companies. Only 30% of respondents say that they are very important. But the secret to handling hot technologies – especially when they seem to be major gambles – is to manage these projects like the high-risk investments they are.

"We're very regimented about rolling out new technology associated with specific business case benefit," says Mathe. " 'Pioneering' R&D is very blue sky – 'applications' R&D turns into product."

> The secret to handling **hot technologies** is to manage these projects like the high-risk **investments they are**

There are expectations to be managed, too. "We have some decent results," says Hans Goemans, vice president of MIS at Avery Dennison Corp.'s Fasson Roll division in Concord, Ohio. "We've trained maybe more people than we should have [in Java and ActiveX]," he says. "And there's always a lot of hype – we're very aware of that."

Top users are also becoming aware that the Internet is rewriting the definition of leading-edge systems. Deploying new applications on a worldwide network – especially one shared with millions of others users – means that the system may be risky even if the basic technology isn't.

"Each component may be prosaic, but doing it on a global basis makes it cutting edge," Popper says.

Still other unorthodox approaches come with tying business systems directly to business partners – not just to exchange invoices, but for key functionality for business systems.

Case in point: Progressive uses wireless modems to tie the laptops of its insurance claims representatives directly into the systems of its auto glass vendor. That lets the insurer send customers to the correct glass repair shop and speeds up the adjustment process.

"The world of the future means getting better at integration," Mathe says.

Meanwhile, top IT shops will spend more and more time on cutting-edge projects with big risks (and big impact) for business units such as manufacturing and research – areas far away from the IT department's traditional data-processing domain. In fact, in the past, many organizations would deliberately keep these types of projects out of the hands of IT.

"If you talk to manufacturers, these big-impact projects weren't under the chief information officer in the past. It would be under the vice president of operations," Conarty says.

But now, says Barbee – whose title was once "IT manager for exploration and production" – those distinctions may be vanishing. "The need comes from the business units," he says. "We just implement it."

No matter how cutting-edge the technology may be. ■

Hayes is Computerworld*'s staff columnist.*

Making Dollars and Sense out of the Internet

The Internet is creating new business models, generating revenue and improving communications

By Tony BAER

AT MERRILL LYNCH & CO.'S Private Client Group, the Internet will soon change the nature of its business.

The company is retooling its 25,000 financial professionals with a common, Web-based enterprise desktop and adding new services to Merrill Lynch OnLine, its public World Wide Web site. As a result, the firm's 4.7 million retail customers may soon be able to call a broker for investment advice while both view virtually the same screens from their Web browsers.

In effect, the Internet will allow Merrill's customers to work more closely with the company on investment strategies, rather than doing business asynchronously, as they do today.

Taking advantage

In an era in which customers can easily bypass their brokers to ply their own securities, trading cheaply online, Merrill is embracing the Web to show that it can deliver even more value to its clientele. Though it could have easily perceived the Web as a threat to its traditional business, Merrill instead is viewing it as an opportunity to improve the delivery of the services it already offers.

And Merrill Lynch is not the only Premier 100 company embracing the Web. A third of Premier 100 respondents say they use the Internet in 10% to 25% of their business-critical applications. For other organizations, the Web represents a whole new way of conducting their business or designing their products. About 10% of Premier 100 respondents say they use the Internet in 75% or more of their business-critical applications. For others, the Web is used for the more mundane goals of improving communications and collaboration, or reducing the cost of deployment.

The Web, it seems, is in the eye of the beholder.

"We're not using the Web because it's trendy," says Philip Gilligan, director of distributed applications technology at Merrill's Private Client Group. "You must care about the business functionality and deploy as appropriate."

Replacing the legacy

That functionality is part of Merrill's Trusted Global Advisor, an $840 million, five-year initiative to upgrade its U.S. Private Client Group – its largest business unit – with more flexible, smarter replacements to its legacy terminal applications. By this fall, all legacy terminals and networks, serving approximately 25,000 professionals, will have been ripped out of its 650 U.S. retail offices and replaced by fiber optics running a Windows NT-based, multitier computing environment.

Trusted Global Advisor will provide its financial consultants with "household views" of client activities, thanks to data pulled from over 30 legacy databases. Some of the benefits will be more effective asset allocation analysis and total portfolio modeling. Many of these analyses will soon be available to Merrill's retail clients via the company's Web site.

Merrill is building Trusted Global Advisor using Microsoft's Component Object Model, which allows Merrill's financial consultants to seamlessly switch from using a spreadsheet or word processor to viewing a news feed, real-time stock quotes or syndicated market data – or running some analytics using an intuitive book-and-tabs metaphor. Via the intranet, Merrill will run many of its mission-critical financial transactions.

The project isn't a blind march to the Web, however. Functions such as broadcast transmission of real-time data, which Gilligan refers to as "the lifeblood of the business," await improvements in Internet push technology. Gilligan says it would be a wasted effort to build this in the interim on proprietary technology. When the technology matures, Merrill intends to pump out real-time quotes to its customers without requiring them to log on to the Web site and submit queries.

Redefining business

Many Premier 100 leaders look at the Internet as a way of redefining everything from business processes to products.

"Web technology is central to product development in all our businesses," says Bill Sanders, vice president of information systems at Honeywell, Inc., a Minneapolis maker of control systems for everything from aviation and industrial plants to building environments.

"Think of what it takes to manage an office building," Sanders says. "The Web is a tremendous way for gathering information, analyzing the data, making decisions. This goes for almost everything we make, from avionics to industrial systems and home control." Sanders adds that the Web will play a key role in a number of other upcoming products that haven't yet been announced.

Looking inside

Honeywell's embrace of Web technology extends to internal enterprise applications. For example, as part of its next upgrade of Oracle Financials, the company is phasing in Oracle's Network Computing Architecture (NCA).

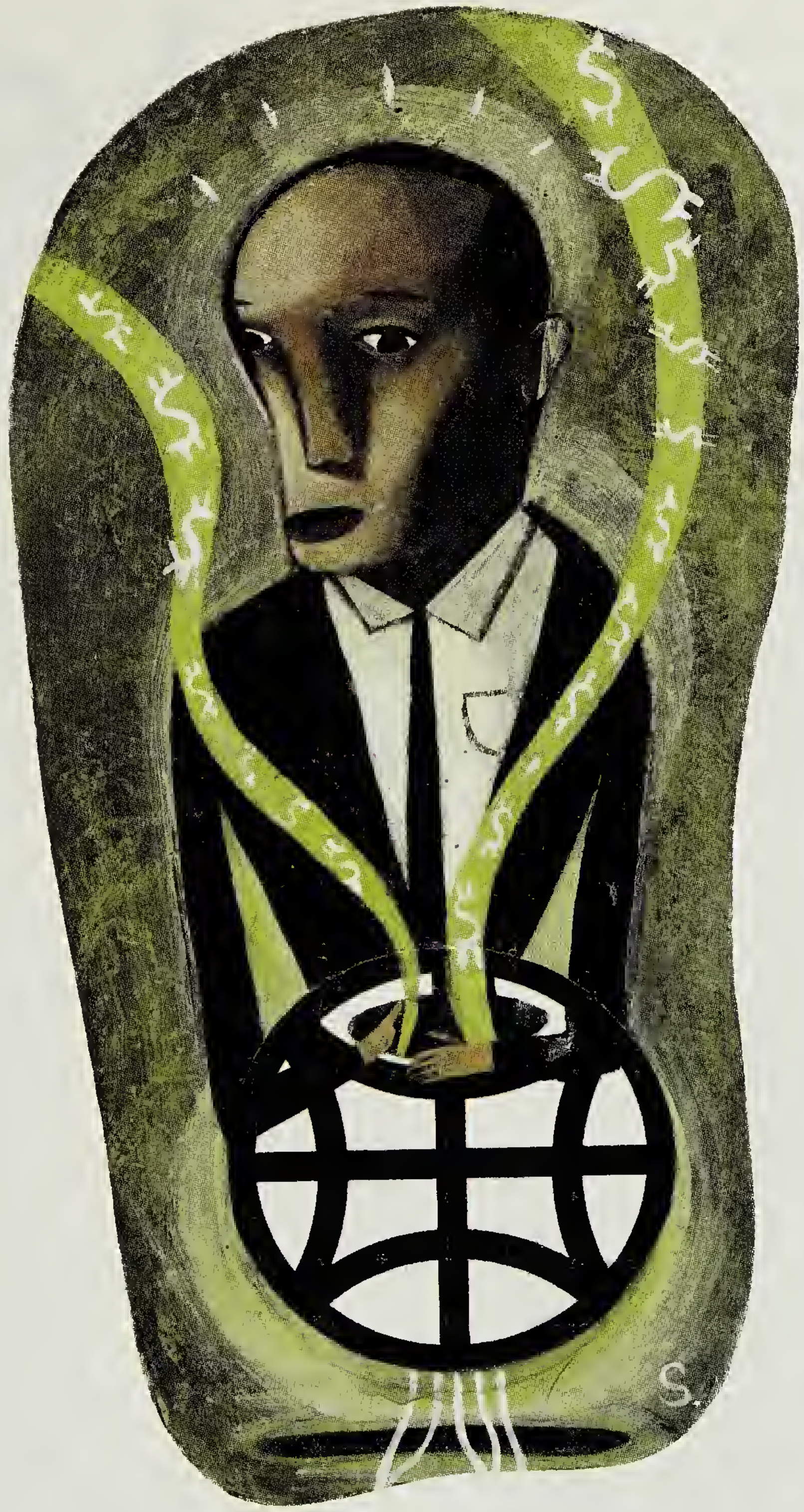
"Because so many people are used to the Web interface, we want to make that our enterprise standard," Sanders says.

Beginning with the usual HR-based intranet, showing employee benefits and other related information, the company's intranet applications have grown to areas such as the Scopus help desk application, sales product configurators and proposal generators. And once the Oracle NCA project is rolled out, Web front ends will be adopted for the PeopleSoft, Inc. HR system.

Honeywell's goals are economic. It is looking to the Web to reduce its working capital requirements while bolstering its products' profitability. While Honeywell plans to measure the savings in total cost of ownership, it won't get carried away. Sanders concedes that getting some of the economic data "might be sketchy." He adds, "The Web is our strategic direction, so we will do it regardless of our ability to track costs." Sanders says the real focus is the Web's impact on increasing profits and lowering costs.

One consequence of the Internet's lower cost of deployment, ease of access and popularity is that vast numbers of Web pages crop up inside the organization, sometimes by the hour, says Franz

Continued on page 42



David Scott Sinclair

CONTINUED FROM PAGE 41

Aman, director of Web marketing at Sun Microsystems, Inc. The Palo Alto, Calif., company's external Web site has more than 70,000 pages (see "Practicing What They Preach"), providing everything from product information and online documentation to software downloads.

Such explosive growth demands new order to the chaos. Sun's answer is to let Web surfers customize what the site shows them. "My Sun," the new personal Web site at *www.sun.com*, uses a combination of server-side Java "servlets" to dynamically generate pages using an Oracle-based Documentum, Inc. document management system, and a Dynamo Java Web server. The goal is making the site more accessible to encourage return visits while avoiding the need to store infinite variations of Web pages to do so.

Walking a fine line

Nonetheless, you don't need 70,000 pages on your site to have a management problem. Xerox Corp., which maintains 8,000 pages on a global network of external Web sites in three dozen languages serving 100 nations, faces the same dilemma.

The Stamford, Conn.-based company walks a fine line, maintaining its internal, decentralized, autonomous culture, while managing to avoid the problems of some sites communicating conflicting information, says Amy Hawman, vice president of Internet channel and marketing.

Xerox's internal Web sites are similarly complex. One major example is WebBoard, which encompasses the HR information and staff directories that have become common among intranets, plus postings from hundreds of product and service groups.

In a company with such a diverse product range and scores of globally distributed operations, WebBoard is a major vehicle for keeping Xerox staff informed of the company's myriad offerings.

Another major intranet site is Field Information Research System Team (FIRST), which provides answers to product questions that are put to Xerox's worldwide field sales and service force.

Saving staff years

FIRST is becoming a big money-saver. During the first half of this year alone, FIRST saved its 3,000 active users 74 staff years, according to Rebecca Bucher, manager of the FIRST Center. That's the equivalent of having an extra 150 people selling more products or delivering faster field service.

Xerox could drown in information if it didn't manage the content. That's why the company is recentralizing management of its external Web sites. Hawman says this is not done as a Big Brother scheme to control content, but to ensure that the sites have a consistent look and don't contradict each other.

That's just Step 1, however. The real benefit of this move will be the ability to identify new cross-selling opportunities. Users ordering copier equipment might also order supplies or document management consulting services.

"We are renavigating all of our site so any customer can get to any part of Xerox, not just the business unit that they're currently dealing with," Hawman says.

Which is just another example of the effect the Internet is having on business practices. ■

Baer is a freelance writer in Bedford, Mass.

Practicing What They Preach

There's probably little surprise that Oracle and Sun, companies known for promoting network computing, are relying heavily on Web-based thin-client technologies for their internal computing needs.

For its external Web site, Oracle adopted its own Network Computing Architecture, which allows the site to handle several times the traffic of the former architecture without adding new hardware.

Gary Roberts, Oracle IT vice president for the Americas, recalls a comment from a European banking customer who estimated that Oracle's rate of technology churn was at least five to six times faster than his firm's.

The vendor does have technology problems, however. "We experience the same difficulties in managing the desktop as any organization," Roberts says. Take E-mail. Until now, the company counted a couple hundred variations in E-mail application configurations with the existing two-tier, client/server application, and it often took an eternal five to six seconds to open mail. Roberts expects the thin-client architecture to virtually eliminate the problems.

Sun also is in the midst of migrating to a mix of internal and third-party applications based on a network computing model. With Sun.net, the new Internet-based E-mail and calendar system, employees no longer have to lug their laptops around the world, says Michaele Rittenberg, vice president of enterprise management and architecture. Based on the user's profile, the front-end environment and access to applications and data automatically follows them.

All totaled, Sun counts roughly 100 Java-based productivity servlet applications – ranging from travel and expense reporting to sales product configuration – which for the most part are replacing three-tier client/server applications. Most applications are deployed from a central point, and run or are cached on local servers to reduce network demand. — *Tony Baer*

What keeps the Premier 100 up at night?

Premier 100 companies may be considered the most effective users of information technology, but their IT managers still have concerns that keep them awake at night. So what has these most effective users tossing and turning?

More than 30% say the **Y2K** problem.

Nearly 25% worry about attracting and retaining **STAFF**.

Ensuring **ALIGNMENT** of IT with the business worries 15%.

For 7%, it's keeping up with the rapid **PACE** of technology.

HERE'S WHAT ELSE KEEPS THEM AWAKE AT NIGHT:

- "I get up at 3 a.m. to check production."
- "Setting the right priorities."
- "Being able to support the infrastructure when global programs go into operation."
- "Staying ahead of our competitors in strategic use of technology."
- "Taking advantage of Internet-based opportunities worldwide."
- "Getting and validating ROI for everything we do."
- "Project delivery and implementation schedules."
- "Escalating salaries."
- "Vertical Integration among vendors and interoperability among applications."
- "Keeping a balance between excellence of execution and innovation."
- "Cycle-time reduction and market-share growth."
- "Expanding the current links of business into the E-commerce marketplace."
- "Responding to business acquisitions and joint ventures."
- "Nothing."

Catherine Streeter

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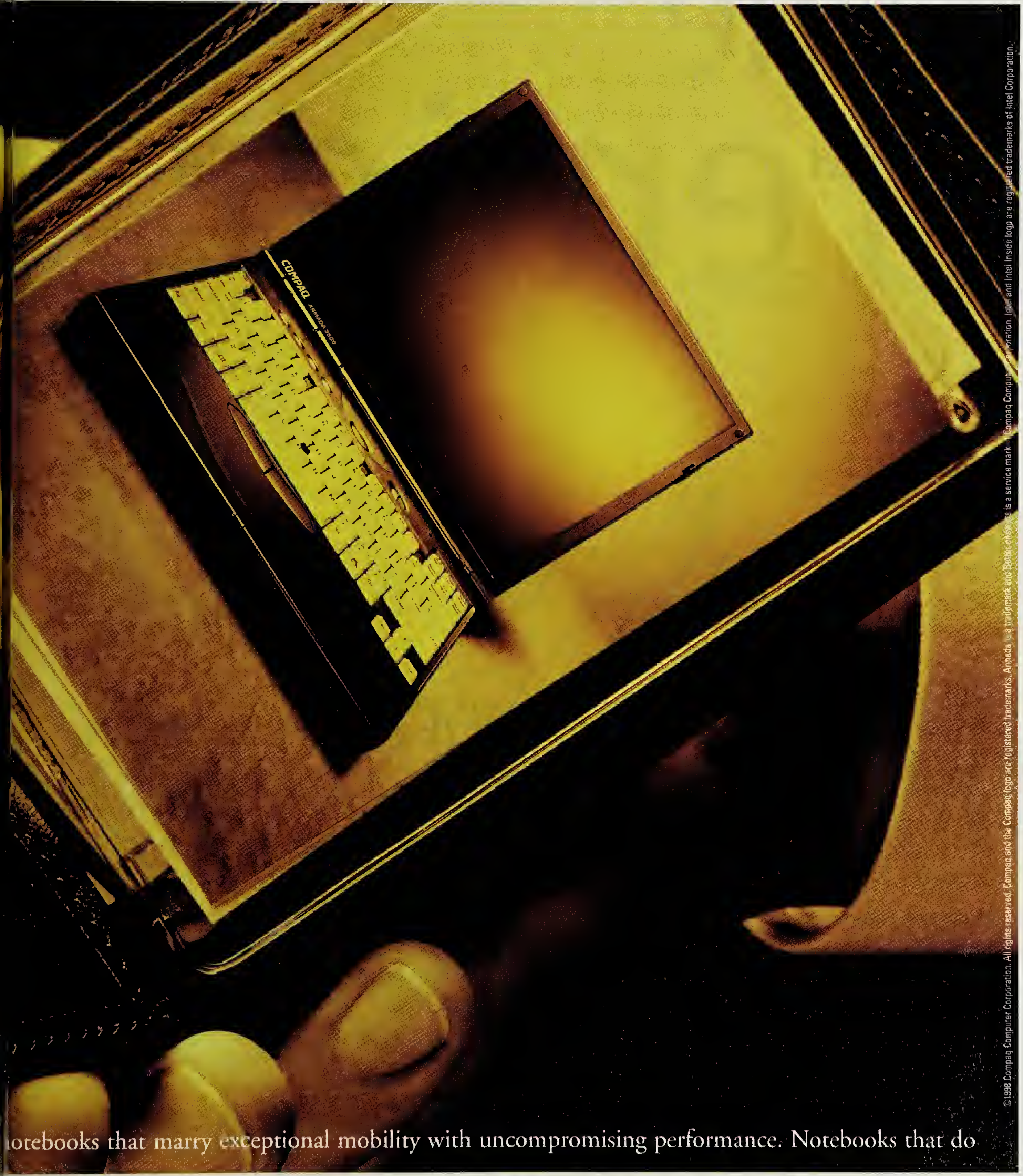

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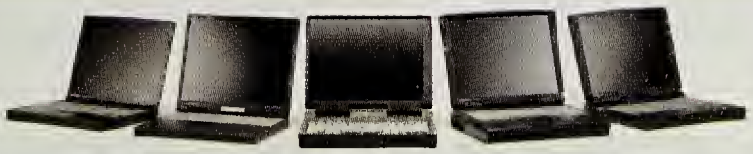

The New Compaq Armada.

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The Premier 100

The most effective users of information technology

Company Name	Web Site	Industry	FY'97 Revenue (millions)	FY'97 Profit (millions)
3Com Corp.	www.3com.com	Information Technology	$5,420 *	$30 *
Ace Hardware Corp.	www.acehardware.com	Wholesale/Retail	$2,907	$76
Aetna, Inc.	www.aetna.com	Financial/Business Services	$18,540	$901
AlliedSignal, Inc.	www.alliedsignal.com	Manufacturer	$14,472	$1,170
American Express Co.	www.americanexpress.com	Financial/Business Services	$17,760	$1,991
American Family Insurance Group	www.amfam.com	Financial/Business Services	$3,602	$252

methodology

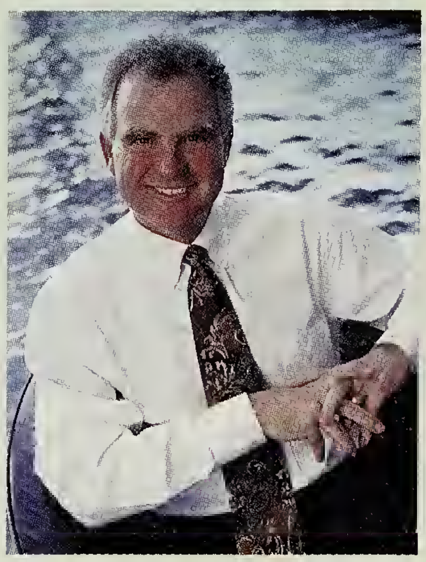
THIS YEAR'S LIST OF Premier 100 companies is based on peer evaluation.

Computerworld surveyed 1,000 IT managers at large and medium-sized organizations in 10 broad industry groups and asked them to list 10 Fortune 1,000 organizations that effectively use IT to improve business performance – and to explain the reasons behind their choices.

Computerworld then contacted the chief information officers and vice presidents of information systems at the most frequently mentioned organizations. We asked 18 questions related to business-critical IT projects, cutting-edge technology, the Internet and IT budgets. We asked for detailed information on the organization's use of information technology to achieve or sustain a competitive advantage. We asked about length of time it took to complete each business-critical IT project; who were the users of the organization's most strategic applications; and about the most significant leading-edge technologies used to build, manage or deploy business-critical applications. We also queried the respondents about outsourcing and return on IT investment.

The Premier 100 list is based on the qualitative and quantitative responses from the most frequently mentioned companies. These companies are listed in alphabetical order – we chose not to rank them because any head-to-head comparison would be unjustifiable given the organizations' markets and lines of business.

The initial survey was conducted in May. The follow-up survey was conducted in August and September.



TOM THOMAS

3Com Corp.

"When your enterprise is standards-based, the round pegs fit in the round holes. Compatibility is the key to access."

key

$ signifies the respondents who spent the least and fell between the 0 and 15th percentile for all who supplied an answer to this question.

$$ signifies respondents who fell between the 16th and 30th percentile.

$$$ signifies respondents who fell between the 31st and 60th percentile.

$$$$ signifies respondents who spent the most and fell between the 61st and 99th percentile.

* signifies fiscal year 1998.

( ) signifies a loss in income.

Revenue and profit figures are from publicly available sources.

IT Budget Percentile *	Percent Change in IT Budget from '97	Business-Critical IT Projects	Percent of Projects Internet-Related	Percent of Projects on Time/ on Budget
$$	10%	Merger Completion/E-Commerce	>75%	50%-75%
$	13%	Y2K/Acenet (Online Ordering Capability)	NA	10%-25%
$$$$	4%	Datasharing/Electronic Claims Payment System	50%-75%	0%-9%
$$$$	NA	ERP/E-Commerce	>75%	25%-50%
NA	NA	NA	NA	NA
$$	25%	Agent Data System/Point of Sale	50%-75%	10%-25%

PAT ZILVITIS

The Gillette Co.

"For a packaging center to operate just-in-time, you have to have integrated information available at any point in the supply chain."

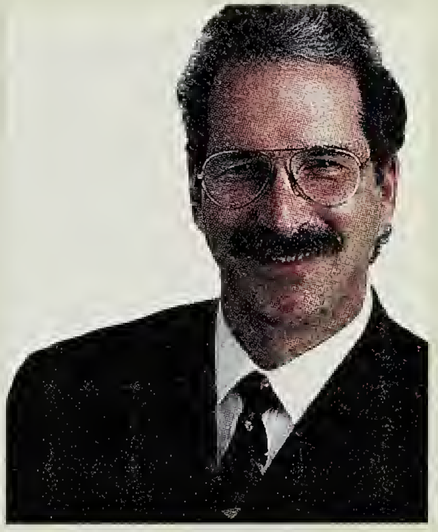
The Premier 100

Company Name	Web Site	Industry	FY'97 Revenue (millions)	FY'97 Profit (millions)
AMR Corp.	www.amrcorp.com	Transportation/Utility	$18,570	$985
Applied Materials, Inc.	www.appliedmaterials.com	Information Technology	$4,074	$499
AT&T Corp.	www.att.com	Information Technology	$51,319	$4,638
Automatic Data Processing, Inc.	www.adp.com	Information Technology	$4,798 *	$605 *
Avery Dennison Corp.	www.averydennison.com	Manufacturer	$3,346	$205
Becton, Dickinson and Co.	www.bd.com	Health Care	$2,811	$300
Bethlehem Steel Corp.	www.bethsteel.com	Manufacturer	$4,631	$281
Burlington Northern Santa Fe Corp.	www.bnsf.com	Transportation/Utility	$8,413	$885
Caterpillar, Inc.	www.caterpillar.com	Manufacturer	$18,925	$1,665
CBS Corp.	www.cbs.com	Media/Entertainment	$5,363	$549
The Charles Schwab Corp.	www.schwab.com	Financial/Business Services	$2,299	$270
Cigna Corp.	www.cigna.com	Financial/Business Services	$20,038	$1,086
Cisco Systems, Inc.	www.cisco.com	Information Technology	$8,459 *	$1,350 *
Citicorp **	www.citibank.com	Financial/Business Services	$34,697	$3,591
Compaq Computer Corp.	www.compaq.com	Information Technology	$24,584	$1,855
CompUSA, Inc.	www.compusa.com	Wholesale/Retail	$5,286 *	$32 *
Computer Associates International, Inc.	www.cai.com	Information Technology	$4,719 *	$1,169 *
Continental Airlines, Inc.	www.flycontinental.com	Transportation/Utility	$7,213	$385
CSX Corp.	www.csx.com	Transportation/Utility	$10,621	$799
Dana Corp.	www.dana.com	Manufacturer	$8,291	$369
Dayton Hudson Corp.	www.dhc.com	Wholesale/Retail	$27,757 *	$751 *
Dell Computer Corp.	www.dell.com	Information Technology	$12,327 *	$944 *
Delta Air Lines, Inc.	www.delta-air.com	Transportation/Utility	$14,138 *	$1,001 *
The Dow Chemical Co.	www.dow.com	Petroleum/Chemical	$20,018	$1,808
Duke Energy Corp.	www.duke-energy.com	Transportation/Utility	$16,309	$974
FDX Corp.	www.fdxcorp.com	Transportation/Utility	$15,873 *	$503 *
First Chicago NBD Corp. ***	www.fcnbd.com	Financial/Business Services	$10,098	$1,525
First Data Corp.	www.firstdatacorp.com	Financial/Business Services	$4,979	$357
Fleet Financial Group, Inc.	www.fleet.com	Financial/Business Services	$8,095	$1,303
Ford Motor Co.	www.ford.com	Manufacturer	$153,627	$6,920
Freddie Mac	www.freddiemac.com	Financial/Business Services	$14,399	$1,395
General Dynamics Corp.	www.gendyn.com	Manufacturer	$4,062	$316

** Merged with Travelers Group on Oct. 8 to form Citigroup, Inc.

*** Merged with Banc One Corp. on Oct. 2 to form Bank One Corp.

IT Budget Percentile *	Percent Change in IT Budget from '97	Business-Critical IT Projects	Percent of Projects Internet-Related	Percent of Projects on Time/ on Budget
NA	NA	NA	NA	NA
$$	10%	Y2K/Network Re-architecture	50%-75%	0%-9%
NA	NA	NA	NA	NA
$$$	10%	Internet Access/Self-Service	>75%	0%-9%
$	8%	Expanding Web Capabilities/ERP	50%-75%	0%-9%
$$	50%	SAP/E-Commerce	50%-75%	0%-9%
$	5%	Merger Completion/Enhanced Scheduling System	50%-75%	10%-25%
$$	5%	Y2K/Common Desktop Platform	50%-75%	0%-9%
$$$$	10%	Y2K/Sales-Force Automation	>75%	0%-9%
$	NA	ERP/Field Level Automation and Handhelds	50%-75%	10%-25%
NA	NA	NA	NA	NA
$$$$	25%	Y2K/Health-Source Integration	50%-75%	>75%
$$$$	45%	Global ERP/Intranet	>75%	>75%
NA	NA	Y2K/Global Sales-Force Automation	50%-75%	25%-50%
$$$	NA	SAP/Supply-Chain Integration	50%-75%	25%-50%
$	20%	Sales-Force Automation/Point of Sale	50%-75%	10%-25%
$	NA	Y2K/Euro	>75%	50%-75%
NA	NA	NA	NA	NA
NA	NA	Conrail Acquisition/Y2K	50%-75%	10%-25%
$$$	10%	Multiple ERP Implementations	>75%	0%-9%
$$$$	11%	Global Merchandising/Y2K	>75%	0%-9%
NA	51%	Y2K/Supply-Chain Management	NA	10%-25%
$$$$	30%	Y2K/Standardizing Application Tool Set	50%-75%	25%-50%
$$$	NA	Y2K/Global Reporting	>75%	10%-25%
$$	NA	Y2K/Lotus Notes Development	>75%	0%-9%
$$$$	10%	Y2K/Supply-Chain Management	NA	>75%
$$$$	NA	Y2K/Enterprise Customer Information System	NA	10%-25%
NA	NA	NA	NA	NA
$$$	10%	Data Warehousing/Customer Access via Internet	>75%	0%-9%
$$$$	NA	E-Commerce/Supply-Chain Management	50%-75%	10%-25%
NA	NA	NA	NA	NA
$$	15%	Network Infrastructure Upgrade/PeopleSoft	50%-75%	10%-25%



SCOTT ABBEY

Paine Webber Group, Inc.

"We're buying rather than building components and have made dramatic improvements in time-to-market."

RANDY MOTT

Wal-Mart Stores, Inc.

"Our stores range from 29,000 square feet to more than 200,000 square feet, and we don't want to tell our managers how to run their businesses. Our culture encourages decisions to be made at the local level."

The Premier 100

Company Name	Web Site	Industry	FY'97 Revenue (millions)	FY'97 Profit (millions)
General Mills, Inc.	www.generalmills.com	Consumer Products/Services	$6,033 *	$422 *
General Motors Corp.	www.gm.com	Manufacturer	$166,445	$6,698
The Gillette Co.	www.gillette.com	Consumer Products/Services	$10,062	$1,427
GTE Corp.	www.gte.com	Information Technology	$23,260	$2,794
The Hartford Financial Services Group, Inc.	www.thehartford.com	Financial/Business Services	$13,673	$1,332
Hilton Hotels Corp.	www.hilton.com	Consumer Products/Services	$5,316	$250
The Home Depot, Inc.	www.homedepot.com	Wholesale/Retail	$24,156 *	$1,160 *
Honeywell, Inc.	www.honeywell.com	Manufacturer	$8,028	$471
IBM Corp.	www.ibm.com	Information Technology	$78,508	$6,093
Ingram Micro, Inc.	www.ingrammicro.com	Information Technology	$16,582	$194
International Paper Co.	www.ipaper.com	Manufacturer	$20,096	($151)
J. C. Penney Co.	www.jcpenney.com	Wholesale/Retail	$29,618 *	$566 *
J.P. Morgan & Co.	www.jpmorgan.com	Financial/Business Services	$17,701	$1,465
The Kroger Co.	www.kroger.com	Wholesale/Retail	$26,567	$412
The Limited, Inc.	www.limited.com	Wholesale/Retail	$9,189 *	$217 *
Lockheed Martin Corp.	www.lmco.com	Manufacturer	$28,069	$1,300
McDonald's Corp.	www.mcdonalds.com	Consumer Products/Services	$11,409	$1,643
The McGraw-Hill Cos.	www.mcgraw-hill.com	Media/Entertainment	$3,534	$291
MCI Communications Corp. ****	www.mciworldcom.com	Information Technology	$19,653	$209
Mellon Bank Corp.	www.mellon.com	Financial/Business Services	$5,134	$771
Merck & Co.	www.merck.com	Health Care	$23,637	$4,614
Merrill Lynch & Co.	www.ml.com	Financial/Business Services	$31,731	$1,906
Metropolitan Life Insurance Co.	www.metlife.com	Financial/Business Services	$24,374	$1,203
Microsoft Corp.	www.microsoft.com	Information Technology	$14,484 *	$4,490 *
Monsanto Co.	www.monsanto.com	Consumer Products/Services	$7,514	$470
National City Corp.	www.national-city.com	Financial/Business Services	$5,152	$807
NCR Corp.	www.ncr.com	Information Technology	$6,589	$7
Northwestern Mutual Life Insurance Co.	www.northwesternmutual.com	Financial/Business Services	$12,326	$689
Oracle Corp.	www.oracle.com	Information Technology	$7,144 *	$814 *
Owens Corning	www.owenscorning.com	Manufacturer	$4,373	$47
Paine Webber Group, Inc.	www.painewebber.com	Financial/Business Services	$6,657	$415
PECO Energy Co.	www.peco.com	Transportation/Utility	$4,618	($1,497)

**** Merged with WorldCom on Sept. 14 to form MCIWorldCom, Inc.

IT Budget Percentile *	Percent Change in IT Budget from '97	Business-Critical IT Projects	Percent of Projects Internet-Related	Percent of Projects on Time/ on Budget
$	NA	Trade Efficiency Analysis/Y2K	>75%	25%-50%
$$$$	NA	Y2K/Next Generation Vehicle Manufacturing	50%-75%	0%-9%
$$$	10%	NA	>75%	10%-25%
$$$$	5%	Y2K/Integrated Billing	>75%	0%-9%
$$$	6%	Interface with Line of Business/Y2K	50%-75%	0%-9%
NA	30%	Reservation System/Global Sales System	50%-75%	10%-25%
NA	NA	NA	NA	NA
$$	14%	Supply-Chain Management/E-Commerce	>75%	>75%
$$$$	NA	Enterprise Web Enablement/Lotus Notes	50%-75%	10%-25%
$$	45%	E-Commerce/Oracle Based Manufacturing System	>75%	10%-25%
$$	5%	SAP/E-Commerce	>75%	0%-9%
$$	NA	Y2K/E-Commerce	>75%	0%-9%
$$$$	12%	Y2K/Euro	>75%	0%-9%
NA	NA	NA	NA	NA
NA	NA	Y2K/Decision Support	NA	10%-25%
$$$$	NA	Knowledge Management/Y2K	NA	NA
$$	3%	Supply-Chain Management/Global Financial System	50%-75%	10%-25%
$	NA	E-Commerce/Network Infrastructure	>75%	25%-50%
$$$$	NA	Y2K/Managed Services IT Solutions	>75%	50%-75%
$$$	7%	Sales-Force Automation/Reconfigure Branch Office	>75%	0%-9%
$$$$	7%	Y2K/Euro	>75%	10%-25%
$$$$	12%	Y2K/Trusted Global Advisor	>75%	50%-75%
$$$$	20%	Y2K/Sales-Force Automation	>75%	0%-9%
$$$$	9%	Call Center Application/Global Data Center	>75%	>75%
$$$	8%	ERP/Global Infrastructure Expansion	50%-75%	0%-9%
NA	NA	NA	NA	NA
$$	NA	Euro/Enterprise Data Warehousing	>75%	25%-50%
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
NA	NA	Sales-Force Automation/Reconstruct Trading Floor	>75%	0%-9%
$$	NA	Y2K/Customer Choice	50%-75%	0%-9%

JACK CRAWFORD

The Hartford Financial Services Group, Inc.

The Hartford Technology Services Co. **"runs as a profit center, but its goal is to get zero profit,"** beat external competitors on price, and cover its costs.

* * *

BILL ELLIOTT

First Chicago NBD Corp.

Year 2000 **"doesn't give you competitive advantage other than allowing you to stay in business."**

* * *

The Premier 100

Company Name	Web Site	Industry	FY'97 Revenue (millions)	FY'97 Profit (millions)
PepsiCo, Inc.	www.pepsico.com	Consumer Products/Services	$20,917	$2,142
Phillips Petroleum Co.	www.phillips66.com	Petroleum/Chemical	$15,424	$959
The Progressive Corp.	www.progressive.com	Financial/Business Services	$4,608	$400
The Prudential Insurance Co. of America	www.prudential.com	Financial/Business Services	$37,073	$610
Raytheon Co.	www.raytheon.com	Manufacturer	$13,673	$527
Rockwell International Corp.	www.rockwell.com	Manufacturer	$7,762	$644
Sears, Roebuck & Co.	www.sears.com	Wholesale/Retail	$41,296	$1,188
Silicon Graphics, Inc.	www.sgi.com	Information Technology	$3,101 *	($460) *
Southwest Airlines Co.	www.southwest.com	Transportation/Utility	$3,817	$318
State Farm Mutual Automobile Insurance Co.	www.statefarm.com	Financial/Business Services	$28,003	$2,450
State Street Corp.	www.statestreet.com	Financial/Business Services	$3,428	$380
Sun Microsystems, Inc.	www.sun.com	Information Technology	$9,791 *	$763 *
Sysco Corp.	www.sysco.com	Wholesale/Retail	$15,328 *	$297 *
Tech Data Corp.	www.techdata.com	Wholesale/Retail	$7,057 *	$90 *
Texaco, Inc.	www.texaco.com	Petroleum/Chemical	$45,187	$2,664
TRW, Inc.	www.trw.com	Information Technology	$10,831	($49)
Tyson Foods, Inc.	www.tyson.com	Wholesale/Retail	$6,356	$186
UAL Corp.	www.ual.com	Transportation/Utility	$17,378	$949
Union Pacific Corp.	www.up.com	Transportation/Utility	$11,079	$432
Unisys Corp.	www.unisys.com	Information Technology	$6,636	($854)
United HealthCare Corp.	www.unitedhealthcare.com	Health Care	$11,563	$460
United Parcel Service of America, Inc.	www.ups.com	Transportation/Utility	$22,458	$909
USAA	NA	Financial/Business Services	$7,454	$1,189
USG Corp.	www.usg.com	Manufacturer	$2,874	$148
Viacom, Inc.	www.viacom.com	Media/Entertainment	$13,206	$794
Walgreen Co.	www.walgreens.com	Wholesale/Retail	$13,363	$436
Wal-Mart Stores, Inc.	www.wal-mart.com	Wholesale/Retail	$117,958 *	$3,526 *
The Walt Disney Co.	www.disney.com	Media/Entertainment	$22,473	$1,966
Wells Fargo & Co.	www.wellsfargo.com	Financial/Business Services	$9,608	$1,155
Xerox Corp.	www.xerox.com	Information Technology	$18,166	$1,452

IT Budget Percentile *	Percent Change in IT Budget from '97	Business-Critical IT Projects	Percent of Projects Internet-Related	Percent of Projects on Time/ on Budget
$$$$	10%	Y2K/Oracle Financial CPG	>75%	10%-25%
$$$	10%	SAP/Oracle Energy	50%-75%	0%-9%
$$$	25%	Computer Telephone/Mobile Claims Settlement	NA	10%-25%
$$$$	NA	Y2K/Enterprise Data Warehouse	>75%	10%-25%
$$$$	NA	SAP/PeopleSoft HRMS Implementation	50%-75%	25%-50%
NA	NA	NA	NA	NA
$$$$	7%	Y2K/Supply-Chain Management	50%-75%	0%-9%
$$	NA	Sales-Force Automation/Customer Service	50%-75%	10%-25%
NA	NA	Y2K/Resolutions Technology	NA	0%-9%
$$$$	23%	Y2K/Marketing Initiatives	NA	0%-9%
$$$	NA	Euro/Y2K	>75%	10%-25%
NA	NA	ERP/E-Commerce	50%-75%	>75%
$$	24%	Sales-Force Automation/Custom Enterprise System	50%-75%	0-9%
$	70%	E-Commerce/Channel Assembly Initiative	50%-75%	10%-25%
NA	NA	Knowledge Management/Global Communications	50%-75%	0%-9%
$$$	20%	SAP/PeopleSoft HRMS Implementation	NA	50%-75%
NA	10%	Extranet/SAP	50%-75%	0%-9%
$$$	17%	Yield Management/Skypath Enhancements	NA	0%-9%
$$$	NA	Merger Completion/Network Management System	>75%	10%-25%
$$	NA	Y2K/ERP	>75%	25%-50%
$$$	7%	E-Business/Y2K	>75%	0%-9%
$$$$	NA	E-Commerce/Customer Automation and Logistics	NA	10%-25%
$$$$	25%	Y2K	50%-75%	10%-25%
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
$$$	15%	Web-Based Applications/Pharmacy System	50%-75%	0%-9%
$$$$	15%	Merchandising System/Electronic Invoice Matching	>75%	25%-50%
NA	NA	NA	NA	NA
$$$	NA	LAN/Information Security Initiatives	50%-75%	0%-9%
NA	NA	Supply Chain/Customer Satisfaction Initiatives	50%-75%	>75%

GLENN RENWICK

The Progressive Corp.

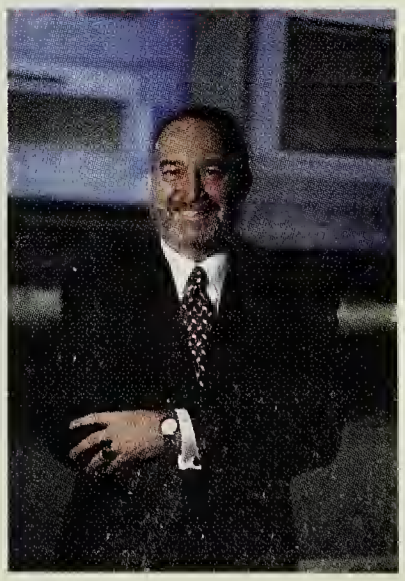
"It's traumatic enough for people who have been involved in an auto accident. We don't need to make their dealings with an insurance company traumatic, too."

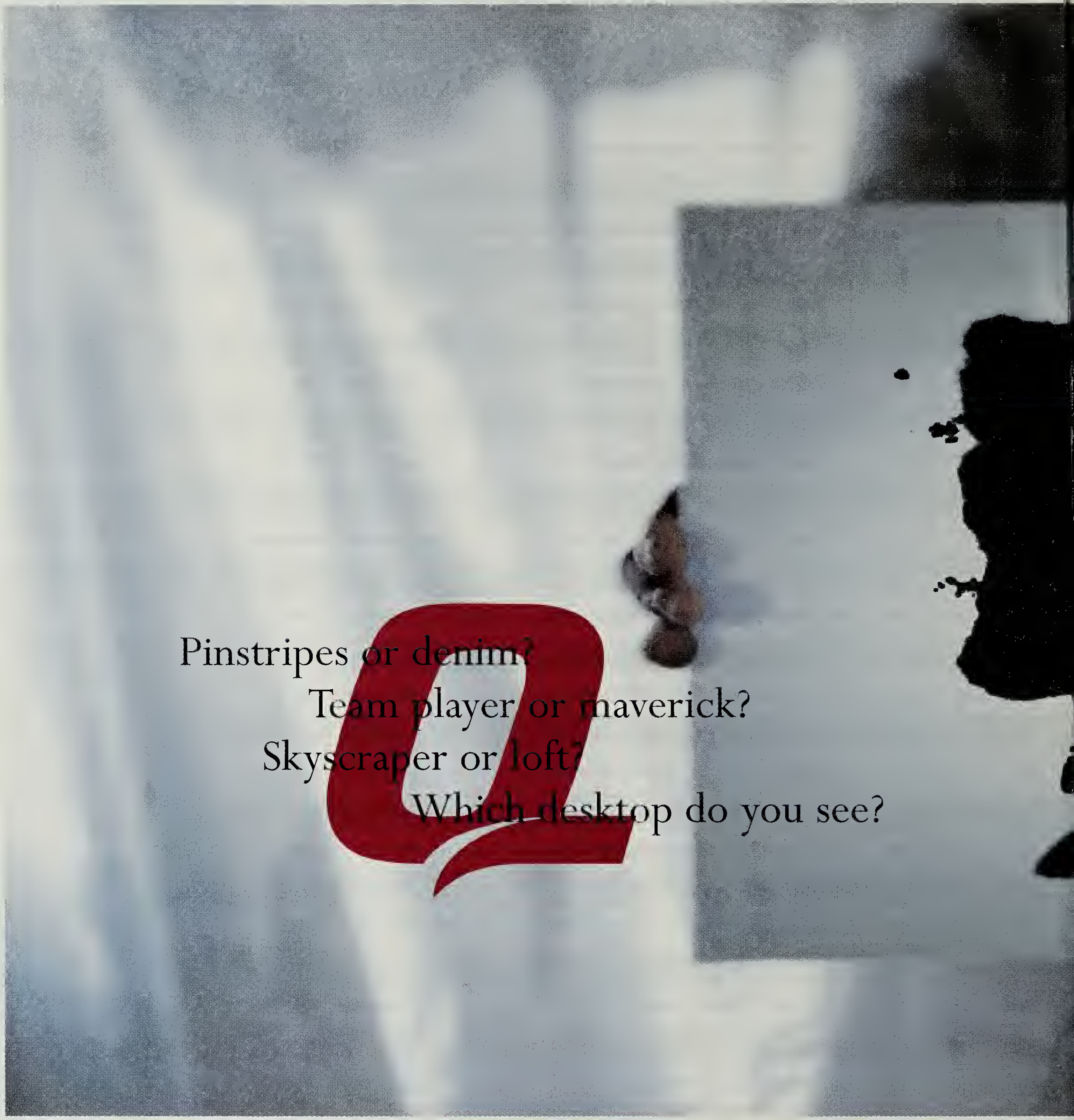
* * *

JOHN CARROW

Unisys Corp.

"We are driving a very ambitious campaign toward standardization and lowering IT costs. Most institutions staring at year 2000 are increasing IT budgets. We are going the other way, lowering costs and increasing productivity."





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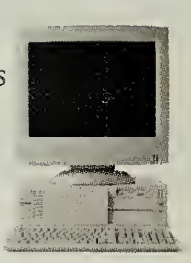
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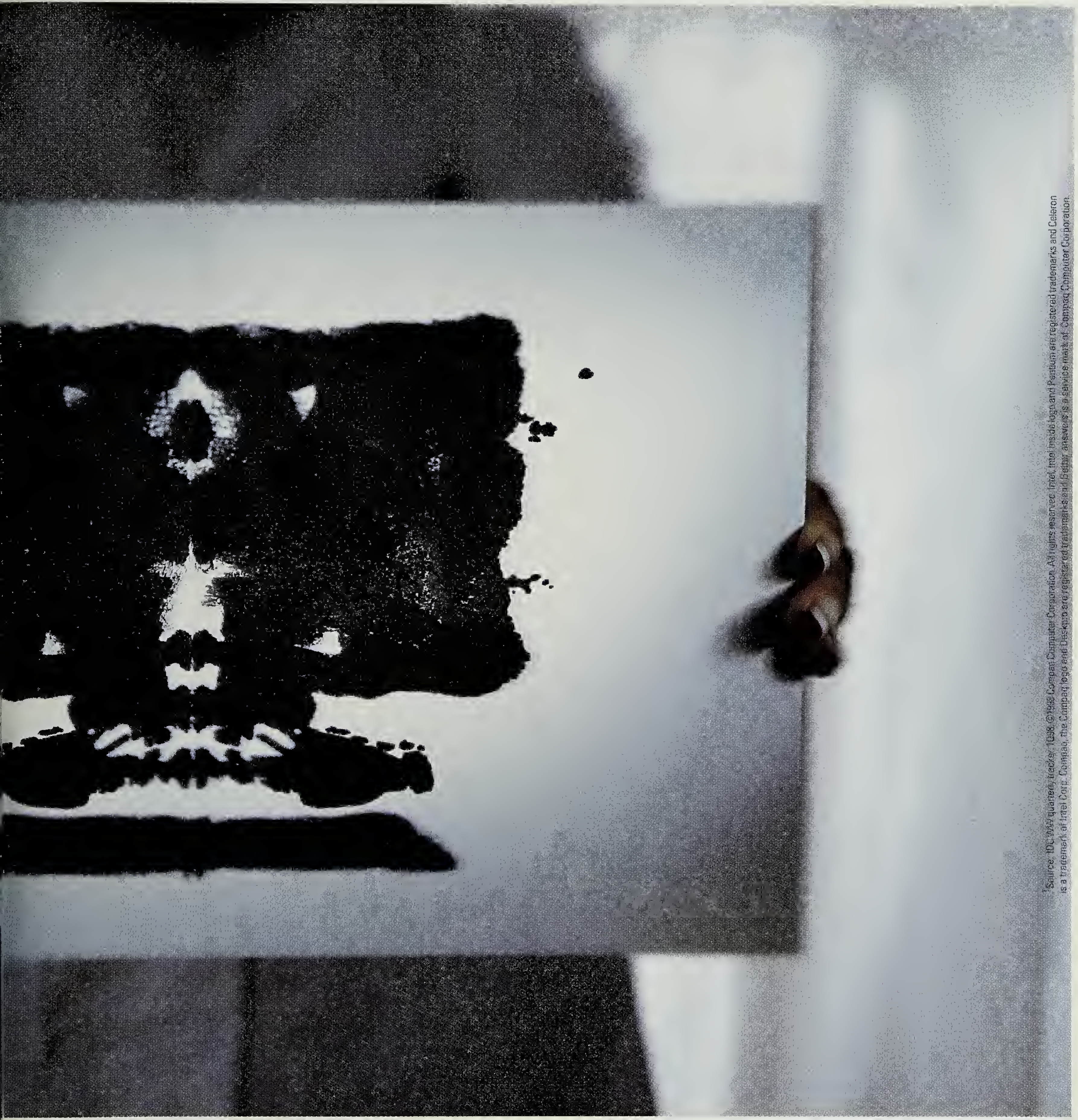

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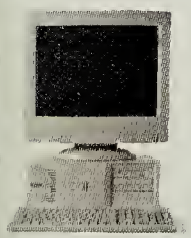

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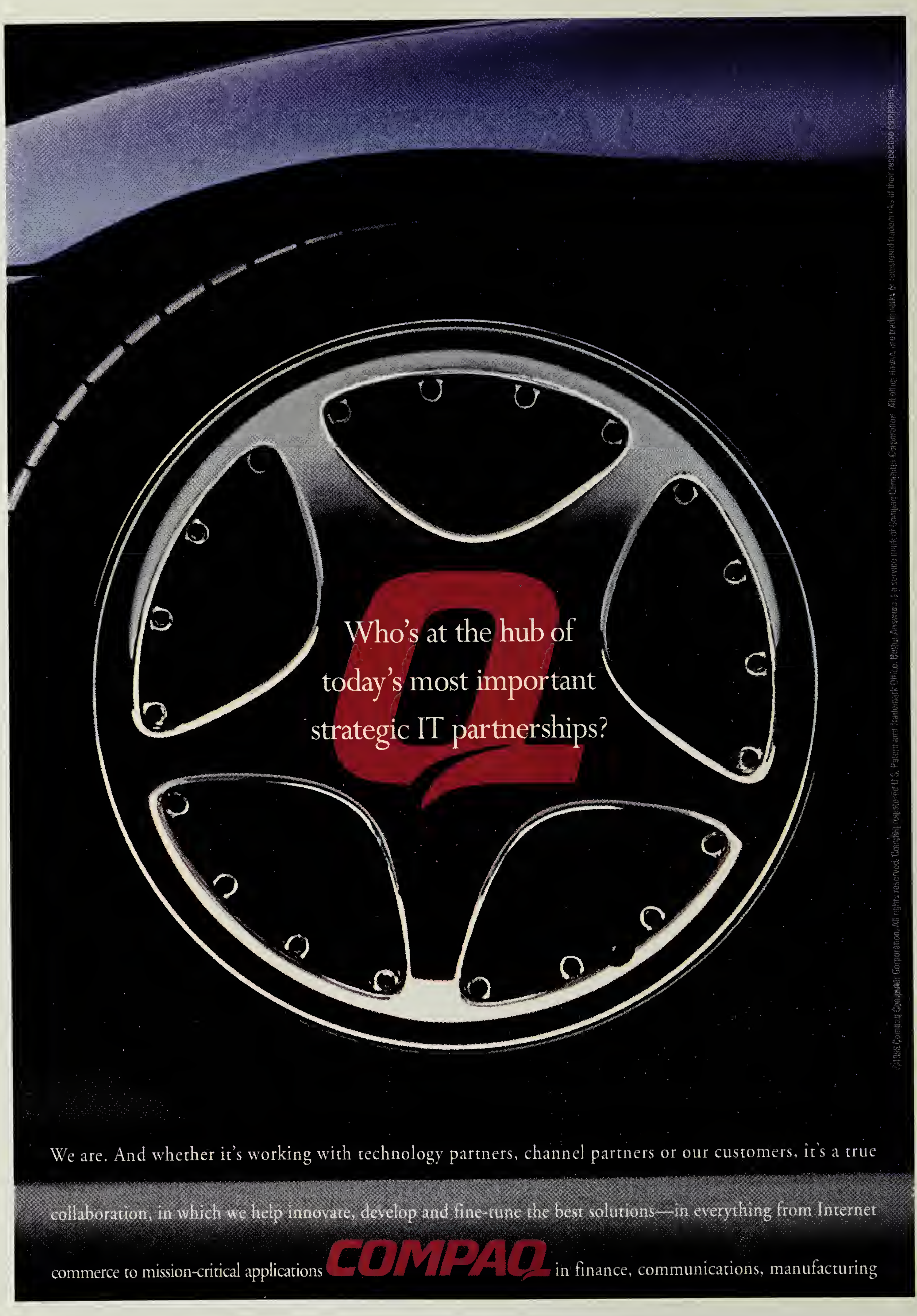

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